

# THE METAL INDUSTRY

WITH WHICH ARE INCORPORATED  
THE ALUMINUM WORLD: COPPER AND BRASS: THE BRASS FOUNDER AND FINISHER  
ELECTRO-PLATERS REVIEW

VOLUME 22

JANUARY—DECEMBER, 1924

THE METAL INDUSTRY PUBLISHING COMPANY  
New York

ARTICLES MARKED (\*) ARE ILLUSTRATED

## ARTICLES

### A

|  |                    |
|--|--------------------|
| Abrasives in Bronze Bushings.....                          | 19                 |
| Acid Copper Solution, Test for.....                        | 361                |
| Adjustable Reamer or Boring Tool.....                      | 280                |
| Airplane, High Speed.....                                  | 445                |
| *Alkaline Cleaning Solutions, Metal Cleansing with.....    | 184                |
| *Alloy Castings from Sheet Scrap, Aluminum Alloy.....      | 481                |
| Alloys, A List of.....                                     | 288, 270, 318, 355 |
| Alloys, Analysis of Aluminum and Its.....                  | 280                |
| Alloys, Inhomogeneities in.....                            | 9                  |
| Alloys, Permanent-Mold Casting of Aluminum.....            | 6                  |
| *Aluminum Alloy Castings from Sheet Scrap.....             | 481                |
| Aluminum Alloys, Permanent-Mold Casting of.....            | 6                  |
| *Aluminum and Copper Fabricated by Welding.....            | 108                |
| Aluminum and Its Alloys, Analysis.....                     | 280                |
| Aluminum and Some of Its Physical Characteristics.....     | 349                |
| Aluminum, Blanking Punches and Dies for.....               | 99                 |
| Aluminum in 1923.....                                      | 21                 |
| Aluminum Industry in America, The.....                     | 450                |
| *Aluminum, Nickel Plating.....                             | 282                |
| *Aluminum Tea Kettles.....                                 | 187                |
| Aluminum, The Determination of Carbon in.....              | 318                |
| America, The Aluminum Industry in.....                     | 450                |
| American Electrochemical Society.....                      | 181                |
| American Electro-Platers' Society, A Short History of..... | 227                |
| *American Electro-Platers' Society Convention.....         | 223, 265           |
| Analysis of Aluminum and Its Alloys.....                   | 280                |
| Annealing, Bright.....                                     | 280                |
| *Annual Meeting of the Institute of Metals Division.....   | 95                 |
| *Annual Metal Finishers' Exposition, Second.....           | 114                |
| Anodes, Tests on Nickel.....                               | 312                |
| Answer to Most Rolling Mill Riddles, The.....              | 9                  |
| *Antimony and Lead, The Production of.....                 | 139                |
| *Art Bronze Work.....                                      | 483                |
| Aspects of the Platinum Stamping Law, Some.....            | 362                |
| Auto Bumpers, Finishing.....                               | 350                |

### B

|  |     |
|--|-----|
| Bage Frames, Green Gold on.....                        | 14  |
| Barrels by Nickel Plating, Reclaiming Gun.....         | 447 |
| Base Metals to Glass, Sealing.....                     | 270 |
| Base Price for Metal.....                              | 100 |
| Bearings for Electric Motors.....                      | 447 |
| Bending Brass and Copper Pipe.....                     | 236 |
| Black Nickel Plating.....                              | 449 |
| Blackened Nickel-Plated Faucets.....                   | 281 |
| Blanking Punches and Dies for Aluminum.....            | 90  |
| *Bodies, Crating Valve.....                            | 484 |
| Bok Peace Plan, The.....                               | 22  |
| *Boring Tool, Adjustable Reamer or.....                | 280 |
| Bottoms, Recovering Furnace.....                       | 351 |
| Brass and Copper, Cleaning.....                        | 270 |
| Brass and Copper Pipe, Bending.....                    | 236 |
| Brass and White Metal, Nickel in.....                  | 234 |
| Brass, Bronze and Copper Products.....                 | 491 |
| Brass Cartridges, Manufacturing.....                   | 63  |
| Brass Company, Plating Research of the Bridgeport..... | 485 |
| Brass Company, The Michigan Copper and.....            | 475 |
| Brass, Cleaning.....                                   | 67  |

|   |          |
|---|----------|
| Brass Faucets, Grinding.....  | 145      |
| Brass Foundries, Impressions of British.....                                | 60       |
| *Brass Foundry Sands, Reclaiming.....                                       | 428      |
| Brass Globe Valves, Seating.....  | 6        |
| Brass Melting Crucibles, Graphites for.....                                 | 59       |
| Brass Moulder, What is a.....   | 395      |
| Brass or Copper, Lubricant for Drawing.....                                 | 484      |
| *Brass, Ordering the Right Kind of Sheet.....                               | 60       |
| Brass Rod, Imperfect Leaded.....  | 236      |
| Brass, Rolling Light Gauge Sheet.....                                       | 100      |
| Brass Solution, The.....  | 319      |
| Brass, Standardization of Plumbing.....                                     | 22       |
| Brazing, Dip.....   | 190      |
| *Bridgeport Brass Company, Plating Research of the.....                     | 485      |
| Bright Annealing.....   | 280      |
| *Britannia Vases, Casting.....  | 401      |
| British Brass Foundries, Impressions of.....                                | 60       |
| British Empire Exhibition, The Non-Ferrous Exhibits of the.....             | 240      |
| British Impressions.....  | 322      |
| British Institute of Metals.....  | 309, 480 |
| British Institute of Metals Meeting.....                                    | 143      |
| British Metal Polishing Industry, Industrial Fatigue Conditions in the..... | 487      |
| *Bronze, and Copper Products, Brass.....                                    | 491      |
| Bronze Bushings, Abrasives in.....  | 19       |
| *Bronze Figure, Unusual.....  | 14       |
| Bronze, Rolling Manganese.....  | 354      |
| Bronze Work, Art.....   | 483      |
| Bumpers, Finishing Auto.....  | 359      |
| Bushings, Abrasives in Bronze.....  | 19       |
| Business, Taxation: The People's.....                                       | 230      |

### C

|   |  |
|---|--|
| Carbon in Aluminum, The Determination of Cartridges, Manufacturing Brass..... | 318                                      |
| *Casting Britannia Vases.....   | 401                                      |
| Casting in the Ford Plant, Die.....   | 363                                      |
| Casting of Aluminum Alloys, Permanent-Mold.....                               | 6  |
| *Casting Metals.....  | 7, 64, 108, 142, 194, 236, 276, 317, 354 |
| *Castings from Sheet Scrap, Aluminum Alloy.....                               | 481                                      |
| *Casting Method, The Mounting of Diamonds by the.....                         | 311                                      |
| *Casting Valve Bodies.....  | 484                                      |
| Castings, Cupola.....   | 444                                      |
| Cast Iron, Soldering.....   | 67                                       |
| Characteristics, Aluminum and Some of Its Physical.....                       | 349                                      |
| Chemists, President Coolidge Praises.....                                     | 108                                      |
| Chromium Plating Steel.....   | 65                                       |
| *City, Milwaukee the Convention.....  | 380                                      |
| *Cleancers, Prepared Metal.....   | 488                                      |
| Cleaning Brass.....   | 67                                       |
| Cleaning Brass and Copper.....  | 279                                      |
| *Cleaning Metals, Modern Methods of.....                                      | 402                                      |
| *Cleaning Solutions, Metal Cleansing with Alkaline.....                       | 184                                      |
| *Cleansing with Alkaline Cleaning Solutions, Metal.....                       | 184                                      |
| Cock Keys, Grease for Gas.....  | 6  |
| Company Omitted, J. B. Ford.....  | 364                                      |
| *Company, The Michigan Copper and Brass.....                                  | 475                                      |
| Conference on Electroplating.....   | 489                                      |
| Control of Gold and Silver Deposited by Weight.....                           | 268                                      |
| *Convention, American Electro-Platers' Society.....                           | 223, 265                                 |
| *Convention City, Milwaukee the.....  | 380                                      |

|  |     |
|--|-----|
| Convention in Milwaukee, The Foundrymen's.....   | 364 |
| *Convention, The Foundry.....                    | 483 |
| Coolidge Praises Chemists, President.....        | 108 |
| *Copper and Brass Company, The Michigan.....     | 475 |
| Copper, Cleaning Brass and.....                  | 279 |
| *Copper Fabricated by Welding, Aluminum and..... | 108 |
| Copper, Lubricant for Drawing Brass or.....      | 484 |
| Copper Myth, The Hardened.....                   | 352 |
| Copper Pipe, Bending Brass and.....              | 236 |
| *Copper Products, Brass, Bronze and.....         | 491 |
| Copper Sheet, Stained.....                       | 406 |
| Copper Solution, Test for Acid.....              | 361 |
| *Copper Wire, The Manufacture of.....            | 309 |
| Correction to Platers' Wrinkles.....             | 195 |
| Corrosion of Metals.....                         | 197 |
| Crucibles, Graphites for Brass Melting.....      | 50  |
| Crucibles, Storing.....                          | 98  |
| Cupola Castings.....                             | 444 |
| Current Transformer, Direct.....                 | 235 |
| Cutting Tools.....                               | 54  |

### D

|   |                   |
|---|-------------------|
| Demand for Silver.....                                    | 198               |
| Deposited by Weight, Control of Gold and Silver.....      | 268               |
| Deposits, Diseases of Nickel.....                         | 66, 153           |
| *Detarnishing of Silver, The Tarnishing and.....          | 15, 110, 151, 231 |
| Determination of Carbon in Aluminum, The.....             | 318               |
| Determination of Molten Metals, The Temperature.....      | 189               |
| *Diamonds by the Casting Method, The Mounting of.....     | 311               |
| Die Casting in the Ford Plant.....                        | 363               |
| Dies for Aluminum, Blanking Punches and.....              | 99                |
| Dip Brazing.....  | 190               |
| Direct Current Transformer.....                           | 235               |
| Direct in the Foundry, Melting Scrap.....                 | 275               |
| Diseases of Nickel Deposits.....                          | 66, 153           |
| *Division, Annual Meeting of the Institute of Metals..... | 95                |
| Drawing Brass or Copper, Lubricant for.....               | 484               |
| Drawing Rectangular Shapes.....                           | 443               |

### E

|   |          |
|---|----------|
| Effect of Temperature Upon Metals.....                                  | 446      |
| Electric Motors, Bearings for.....                                      | 447      |
| Electrochemical Society, American.....                                  | 181      |
| Electroforming, Recent Progress in Electroplating and.....              | 229      |
| Electrolytic Nickel, Mechanically Perfect.....                          | 320      |
| Electro-Platers' Society, A Short History of the American.....          | 227      |
| *Electro-Platers' Society Convention, American.....                     | 223, 265 |
| Electroplating and Electroforming, Recent Progress in.....              | 225      |
| Electroplating, Conference on.....                                      | 480      |
| Electro-Plating Industry in 1923, The.....                              | 20       |
| Electro-Plating Research.....   | 154      |
| Expoire Exhibition, The Non-Ferrous Exhibits of the British Empire..... | 240      |
| Enamelled Iron Ware Warps, Why.....                                     | 276      |
| Equipment, Plating Room.....  | 10       |
| Etching.....  | 113      |
| Exhibition, The Non-Ferrous Exhibits of the British Empire.....         | 240      |
| Exhibits of the British Empire Exhibition, The Non-Ferrous.....         | 240      |
| *Exposition, Second Annual Metal Finishers'.....                        | 134      |

**F**

- \*Fabricated by Welding, Aluminum and Copper ..... 108
- Fatigue Conditions in the British Metal Polishing Industry, Industrial ..... 487
- Faucets, Blackened Nickel-Plated ..... 281
- Faucets, Grinding Brass ..... 145
- \*Figure, Unusual Bronze ..... 14
- \*Finishers' Exposition, Second Annual Metal 114
- Finishing Auto Bumpers ..... 359
- Ford Company Omitted, J. B. ..... 364
- Ford Plant, Die Casting in the ..... 363
- Foundries, Impression of British Brass ..... 60
- \*Foundry Convention, The ..... 423
- Foundry, Melting Scrap Direct in the ..... 275
- Foundry Problems, Some ..... 104
- \*Foundry Sands, Reclaiming Brass ..... 483
- Foundry, The Molding Machine in the Jobbing ..... 357
- Foundrymen's Convention in Milwaukee, The 364
- Frames, Green Gold on Bag ..... 14
- Friction Wedge, Metal for ..... 310
- Furnace Bottoms, Recovering ..... 351

**G**

- Gas Cock Keys, Grease for ..... 6
- Gaskets, Punching Lead Washers or ..... 394
- Gauge Sheet Brass, Rolling Light ..... 109
- Glass, Sealing Base Metals to ..... 279
- \*Globe Valves, Seating Brass ..... 6
- Gold and Silver Deposited by Weight, Control of ..... 268
- Gold on Bag Frames, Green ..... 14
- Gold Scraps, Recovering ..... 100
- Golf Heads, Monel Metal ..... 99
- Government and Industry ..... 198
- Graphites for Brass Melting Crucibles ..... 59
- Grease for Gas Cock Keys ..... 6
- Green Gold on Bag Frames ..... 14
- Grinding Brass Faucets ..... 145
- Gun Barrels by Nickel Plating, Reclaiming ..... 447

**H**

- Hardened Copper Myth, The ..... 352
- Heads, Monel Metal Golf ..... 99
- High Speed Airplane ..... 445
- History of the American Electro-Platers' Society, A Short ..... 227
- Hot Nickel Solution ..... 150
- \*House, Metal on Washington's ..... 312

**I**

- Imperfect Leaded Brass Rod ..... 236
- Impressions, British ..... 322
- Impressions of British Brass Foundries ..... 60
- Industrial Fatigue Conditions in the British Metal Polishing Industry ..... 487
- Industry, Government and ..... 198
- Industry in America, The Aluminum ..... 450
- Industry in 1923, The Electro-Plating ..... 20
- \*Industry, The Metal Trades and the Radio ..... 53
- Inhomogeneities in Alloys ..... 9
- Institute of Metals, British ..... 399, 480
- \*Institute of Metals Division, Annual Meeting of the ..... 95
- Institute of Metals Meeting, British ..... 143
- Investigations, Plating ..... 360
- Iron, Soldering Cast ..... 67
- Iron Ware Warps, Why Enamored ..... 276
- Ironless Yacht, New ..... 437

**J**

- Jewelry Production, Speeding ..... 358
- Jobbing Foundry, The Molding Machine in the ..... 357

**K**

- \*Kettles, Aluminum Tea ..... 187
- Keys, Grease for Gas Cock ..... 6
- \*Kind of Sheet Brass, Ordering the Right ..... 69

**L**

- Law, Some Aspects of the Platinum Stamping ..... 362
- \*Lead, The Production of Antimony and ..... 139
- Lead Washers or Gaskets, Punching ..... 394
- Leaded Brass Rod, Imperfect ..... 236
- Light Gauge Sheet Brass, Rolling ..... 109
- List of Alloys, A ..... 236, 270, 313, 355
- Loose Pulley Troubles ..... 99
- Lubricant for Drawing Brass or Copper ..... 484

**M**

- Machine in the Jobbing Foundry, The Molding ..... 357
- Machine Practice, Molding ..... 5
- \*Machine Practice, Molding ..... 287, 272
- \*Machine, The Molding ..... 56
- \*Machine, The Squeezing Molding ..... 191
- \*Machines and Molding Practice, Molding ..... 100
- Machines, Types of Molding ..... 315, 397, 442
- Machines, Why Molding ..... 146
- Manganese Bronze, Rolling ..... 354
- \*Manufacture of Copper Wire, The ..... 300
- Manufacture of Phonograph Matrixes, The ..... 405
- Manufacturing Brass Cartridges ..... 63
- Market for 1923, Review of the Silver ..... 68
- Market, Silver ..... 21
- Materials Society Meeting, Testing ..... 269
- Matrixes, The Manufacture of Phonograph ..... 405
- Mechanically Perfect Electrolytic Nickel ..... 320
- Meeting, British Institute of Metals ..... 143
- \*Meeting of the Institute of Metals Division, Annual ..... 95
- Meeting of the Newark Platers ..... 195
- Meeting of the New York Platers ..... 112
- Meeting, Metal Trades ..... 198

- Meeting, Testing Materials Society ..... 269
- Melting Crucibles, Graphites for Brass ..... 59
- Melting Scrap Direct in the Foundry ..... 275
- Metal, Base Price for ..... 109
- \*Metal Cleaners, Prepared ..... 483
- \*Metal Cleansing with Alkaline Cleaning Solutions ..... 184
- \*Metal Finishers' Exposition, Second Annual 114
- Metal for Friction Wedge ..... 310
- Metal Golf Heads, Monel ..... 99
- Metal, Nickel in Brass and White ..... 234
- Metal Polishing Industry, Industrial Fatigue in the ..... 487
- \*Metal on Washington's House ..... 312
- \*Metal Trades and the Radio Industry, The 53
- Metal Trades Meeting ..... 198
- Metals, British Institute of ..... 399, 480
- \*Metals, Casting ..... 7, 64, 103, 142, 194, 236, 276, 317, 334
- Metals, Corrosion of ..... 197
- \*Metals Division, Annual Meeting of the Institute of ..... 95
- Metals, Effect of Temperature Upon ..... 446
- Metals Meeting, British Institute of ..... 143
- \*Metals, Modern Methods of Cleaning ..... 402
- \*Metals, New Uses for ..... 1, 55
- Metals, Testing ..... 312
- Metals, The Temperature Determination of Molten ..... 189
- Metals to Glass, Sealing Base ..... 279
- \*Method, the Mounting of Diamonds by the Casting ..... 311
- \*Methods of Cleaning Metals, Modern ..... 402
- \*Michigan Copper and Brass Company, The ..... 475
- Mill Riddles, The Answer to Most Rolling ..... 9
- \*Milwaukee, The Convention City ..... 389
- Milwaukee, The Foundrymen's Convention in 264
- \*Modern Methods of Cleaning Metals ..... 402
- Molding Machine in the Jobbing Foundry, The ..... 357
- Molding Machine Practice ..... 5
- \*Molding Machine Practice ..... 237, 272
- \*Molding Machine, The ..... 56
- \*Molding Machine, The Squeezing ..... 191
- \*Molding Machines and Molding Practice ..... 100
- \*Molding Machines, Types of ..... 315, 397, 442
- Molding Machines, Why? ..... 146
- \*Molding Practice, Molding Machines and... 100
- Molten Metals, The Temperature Determination of ..... 189
- Monel Metal Golf Heads ..... 99
- Motors, Bearings for Electric ..... 447
- Moulder, What is a Brass ..... 395
- \*Mounting of Diamonds by the Casting Method, The ..... 311
- Myth, The Hardened Copper ..... 352

**N**

- Newark Platers, Meeting of the ..... 193
- \*New Uses for Metals ..... 1, 55
- New Uses for Silver ..... 197
- New York Platers, Meeting of the ..... 112
- Nickel Anodes, Tests on ..... 312
- Nickel Deposits, Diseases of ..... 66, 153
- Nickel in Brass and White Metal ..... 234
- Nickel, Mechanically Perfect Electrolytic ..... 320
- Nickel-Plated Faucets, Blackened ..... 281
- \*Nickel Plating Aluminum ..... 282
- Nickel Plating, Black ..... 449
- Nickel Plating, Reclaiming Gun Barrels by ..... 447
- Nickel Silver, Solder for ..... 9
- Nickel Solution, Hot ..... 150
- Nickel Solutions, Survey of (Conclusion) ..... 18
- Nobis Rings ..... 359
- Non-Ferrous Exhibits of the British Empire Exhibition, The ..... 240

**O**

- Omitted, J. B. Ford Company ..... 364
- \*Ordering the Right Kind of Sheet Brass ..... 69

**P**

- Past and Present, Platers ..... 196
- Peace Plan, The Bok ..... 22
- People's Business, Taxation: The ..... 230
- Perfect Electrolytic Nickel, Mechanically ..... 320
- Permalloy ..... 394
- Permanent-Mold Casting of Aluminum Alloys ..... 6
- Phonograph Matrixes, The Manufacture of ..... 405
- Physical Characteristics, Aluminum and Some of Its ..... 349
- Pictures by Telegraph ..... 240
- Pipe, Bending Brass and Copper ..... 236
- Pittman Act, Silver and the ..... 114
- Plan, The Bob Peace ..... 22
- Plant, Die Casting in the Ford ..... 363
- Plated Faucets, Blackened Nickel ..... 281
- Platers, Meeting of the Newark ..... 105
- Platers, Meeting of the New York ..... 112
- Platers, Past and Present ..... 196
- Platers' Society, A Short History of the American Electro- ..... 227
- \*Platers' Society Convention, American Electro- ..... 223, 265
- Society Meeting, Testing Materials ..... 298
- Solder for Nickel Silver ..... 9
- Soldering Cast Iron ..... 67
- \*Soldering, Welding Versus Silver ..... 353
- Solution, Hot Nickel ..... 150
- Solution, Test for Acid Copper ..... 361
- Solution, The Brass ..... 319
- \*Solutions, Metal Cleansing with Alkaline Cleaning ..... 184
- Solutions, Survey of Nickel, Conclusion, Some Aspects of the Platinum Stamping Law ..... 362
- Some Foundry Problems ..... 104
- Speed Airplane, High ..... 445
- Speeding Jewelry Production ..... 338
- \*Spoon, The Story of the ..... 148, 277
- \*Squeezing Molding Machine, The ..... 191
- Stained Copper Sheet ..... 406
- Stamping Law, Some Aspects of the Platinum ..... 362
- Standardization of Plumbing Brass ..... 22
- Steel, Chromium Plating ..... 65
- Storing Crucibles ..... 98
- \*Story of the Spoon, The ..... 148, 277
- Survey of Nickel Solutions, Conclusion ..... 19

**T**

- \*Tarnishing and Detarnishing of Silver, The..... 15, 110, 151, 231
- Taxation: The People's Business..... 230
- \*Tea Kettles, Aluminum..... 187
- Telegraph, Pictures by..... 240
- Temperature Determination of Molten Metals, The..... 189
- Temperature Upon Metals, Effect of..... 446
- Test for Acid Copper Solution..... 361
- Test, Zinc Roofs Under..... 351
- Testing Materials Society Meeting..... 269
- Testing Metals..... 312
- Tests on Nickel Anodes..... 312
- \*Tool, Adjustable Reamer or Boring..... 280
- Tools, Cutting..... 54
- \*Trades and the Radio Industry, The Metal..... 53
- Trades Meeting, Metal..... 198
- Transformer, Direct Current..... 235
- \*Tripoli..... 10
- Troubles, Loose Pulley..... 99
- \*Types of Molding Machines..... 315, 397, 442

**U**

- Under Test, Zinc Roofs..... 351
- \*Unusual Bronze Figure..... 14
- \*Uses for Metals, New..... 1, 55
- Uses for Silver, New..... 107

**V**

- \*Valve Bodies, Casting..... 484
- \*Valves, Seating Brass Globe..... 6
- \*Vases, Casting Britannia..... 401
- W**
- Ware Warps, Why Enamelled Iron..... 276
- Warps, Why Enamelled Iron Ware..... 276
- Washers or Gaskets, Punching Lead..... 304
- \*Washington's House, Metal on..... 312
- Wedge, Metal for Friction..... 310
- Weight, Control of Gold and Silver Deposited by..... 268
- \*Welding, Aluminum and Copper Fabricated by..... 108
- \*Welding Versus Silver-Soldering..... 353
- What is a Brass Moulder?..... 395
- White Metal, Nickel in Brass and..... 234
- Why Enamelled Iron Ware Warps..... 276
- Why Molding Machines?..... 146
- Wire, The Manufacture of Copper..... 309
- Work, Art Bronze..... 483
- Work, Railroad Plating..... 448
- Wrinkles, Correction to Platers'..... 195

**Y**

- Yacht, New Ironless..... 437
- Z**
- Zinc Roofs Under Test..... 351

**AUTHORS****A**

- Abate, W. L. Grease for Gas Cock Keys..... 6
- Aluminum Man, Aluminum in 1923..... 21
- Aluminum Man, \*New Uses for Metals..... 3
- Anderson, Robert, J. Determination of Carbon in Aluminum, The..... 318
- Arnold, J. F. \*Art Bronze Work..... 483

**B**

- Baily, T. F. \*New Electric Furnace..... 32
- Baker, E. M. \*Metal Cleansing with Alkaline Cleaning Solutions..... 184
- Bartley, Jonathan. Graphites for Brass Melting Crucibles..... 56
- Bartley, Jonathan. Storing Crucibles..... 96
- Binney, R. L. Temperature Determination of Molten Metals, The..... 190
- Blair, P. W. \*Adjustable Reamer or Boring Tool..... 280
- Blair, P. W. Bending Brass and Copper Pipe..... 236
- Blair, P. W. Blanking Punches and Dies for Aluminum..... 99
- Blair, P. W. Dip Brazing..... 190
- Blair, P. W. Drawing Rectangular Shapes..... 443
- Blair, P. W. Grease for Gas Cock Keys..... 6
- Blair, P. W. Loose Pulley Troubles..... 90
- Blair, P. W. Lubricant for Drawing Brass or Copper..... 484
- Blair, P. W. Monel Metal Golf Heads..... 99
- Blair, P. W. Punching Lead Washers or Gaskets..... 394
- Blair, P. W. Solder for Nickel Silver..... 9
- Blair, P. W. Soldering Cast Iron..... 67
- Blair, T. S. \*Prepared Metal Cleaners..... 488
- Blum, Dr. William. Electro-Plating Research..... 154
- Blum, Dr. W. Recent Progress in Electro-Plating and Electroforming..... 229
- Bregman, Adolph. New Uses for Metals..... 55
- Brooks, Samuel H. Determination of Carbon in Aluminum, The..... 318
- Butler, P. B. \*Tripoli..... 10

**C**

- Campbell, Wm. A List of Alloys..... 238, 270, 313, 355
- Christie, John L. \*Ordering the Right Kind of Sheet Brass..... 69
- Christie, John L. \*Plating Research of the Bridgeport Brass Company..... 485
- Clark, Royal F. Plating Room Equipment..... 19

- Clarke, R. R. Molding Machine in the Jobbing Foundry, The..... 357
- Clarke, R. R. Molding Machine Practice..... 237, 272

- Clarke, R. R. \*Molding Machines and Molding Practice..... 100
- Clearner, A. \*Modern Methods of Cleaning Metals..... 402
- Corse, W. M. Nickel in Brass and White Metal..... 234

**D**

- Deterding, Henry C. Melting Scrap Direct in the Foundry..... 275
- Dickie, Francis. \*Railroad Plating Work..... 448

**E**

- Elchstaedt, T. C. Finishing Auto Bumpers..... 350
- Eldridge, C. H. Conference on Electroplating..... 489
- Emmett, W. L. R. \*Power from Mercury Vapor..... 33
- Erickson, E. G. \*Skippstedt Multiple Core-Making Machine, The..... 291

**F**

- Flanagan, Nelson F. Molding Machine Practice..... 5
- Foley, R. L. \*Milwaukee the Convention City..... 389

**G**

- Gehling, George. Platers, Past and Present..... 196
- Gleason, Edward D. Hardened Copper Myth, The..... 352
- Grubb, A. A. \*Reclaiming Brass Foundry Sands..... 433

**H**

- Haas, Joseph, Jr. Survey of Nickel Solutions..... 18
- Hall, Joseph A. Control of Gold and Silver Deposited by Weight..... 268
- Hancock, Clarence L. History of Phonographic Wire..... 416
- Harper, Thomas. British Impressions..... 322
- Harper, Thomas. Impressions of British Brass Foundries..... 60
- Hibben, F. M. \*High Speed Heavy Duty Polishing..... 207
- Hiers, Geo. O. \*New Uses for Metals..... 3
- Hirschmann, W. F. Cutting Tools..... 54
- Hirschmann, W. F. Grinding Brass Faucets..... 145
- Hirschmann, W. F. Manufacturing Brass Cartridges..... 63
- Hirschmann, W. F. \*Seating Brass Globe Valves..... 6
- Hoke, Cal Morrison. Some Aspects of the Platinum Stamping Law..... 362
- Huntley, F. J. Die Casting in the Ford Plant..... 363

**J**

- Jarvis, Ernest G. Effect of Temperature Upon Metals..... 446
- Jennings, T. F. Cupola Castings..... 444
- Jones, Jessie L. Bearings for Electric Motors..... 447
- Jones, Jessie L. Metal for Friction Wedge..... 310

**K**

- King, Willis R. Test for Acid Copper Solution..... 361
- Knerr, Horace. \*Aluminum Alloy Castings from Sheet Scrap..... 481
- Krom, L. J. Base Price for Metal..... 100

**L**

- Levings, G. V. B. \*Tripoli..... 10
- Lott, Merrill R. What is a Brass Moulder?..... 395
- Madsen, Charles P. Mechanically Perfect Electrolytic Nickel..... 320
- Maxwell, Harry Buddington. Black Nickel Plating..... 449
- Miller, C. W. Why Molding Machines?..... 146
- Miller, Howard. \*Mounting of Diamonds
- Millman, A. \*Michigan Copper and Brass Company, The..... 475
- by the Casting Method, The..... 311
- Mitchell, R. C. \*New Motor Driven Polishing Lathe..... 334
- Munday, A. H. Some Foundry Problems..... 104

**P**

- Parry, Wm. H. Salesmanship..... 155
- Pettis, Wm. J. Answer to Most Rolling Mill Riddles, The..... 9
- Pettis, W. J. Bright Annealing..... 280
- Pettis, W. J. Imperfect Leaded Brass Rod..... 236
- Pettis, W. J. Recovering Furnace Bottoms..... 351
- Pettis, W. J. Rolling Light Gauge Sheet Brass..... 109
- Pettis, W. J. Rolling Manganese Bronze..... 354
- Pettis, W. J. Stained Copper Sheet..... 406
- Pettis, W. J. \*The Manufacture of Copper Wire..... 309
- Proctor, Chas. H. Cleaning Brass and Copper..... 279
- Proctor, C. H. Etching..... 113
- Proctor, C. H. Green Gold on Bag Frames..... 14
- Proctor, Chas. H. \*Nickel Plating Aluminum..... 282
- Proctor, Chas. H. Niobis Rings..... 359

- Proctor, C. H. Recovering Gold Scraps..... 109
- Proctor, C. H. The Electro-Plating Industry in 1923..... 29

**R**

- Ramsay, H. L. \*Electric Solder Pot..... 80
- Reardon, W. J. \*Casting Britannia Vases..... 401
- Reardon, W. J. \*Casting Metals..... 7, 84, 103, 142, 194, 230, 317, 354
- Reardon, W. J. \*Casting Valve Bodies..... 484
- Richardson, Commander H. C. High Speed Airplane..... 445

**S**

- Saunders, A. F. \*The Story of the Spoon..... 148, 277

- Schneidewind, Richard. \*Metal Cleansing with Alkaline Cleaning Solutions..... 184

- Schramm, G. N. \*The Tarnishing and Detarnishing of Silver..... 15, 110, 151, 231

- Schwartz, K. W. Chromium Plating Steel..... 65

- Search, R. E. \*Squeezier Molding Machine, The..... 101
- Search, R. E. \*The Molding Machine..... 56

- Search, R. E. \*Types of Molding Machines..... 315, 397, 442

- Servis, Oscar E. A Short History of the American Electro-Platers' Society..... 227

- Sizelove, O. J. Brass Solution, The..... 319

- Stevens, Frederic B. Blackened Nickel-Plated Faucets..... 281

- Stirton, Eugene D. \*The Double-Wedge Comparator..... 164

- Suhl, R. L. \*New Uses for Metals..... 4

**T**

- Terbile, N. I. Temperature Determination of Molten Metals, The..... 189

- Turner, E. A. \*New Uses for Metals..... 4

- Tuthill, S. S. \*New Uses for Metals..... 2

**U**

- Universal Trade Press Syndicate. Industrial Fatigue Conditions in the British Metal Polishing Industry..... 487

**V**

- Vinal, G. W. \*The Tarnishing and Detarnishing of Silver..... 15, 110, 151, 231

- Voss, Wm. Diseases of Nickel Deposits..... 66, 153

**W**

- Wegner, L. \*American Electro-Platers' Society Convention..... 283

- Wegner, L. \*American Electro-Platers' Society Convention..... 266

- Wein, Samuel. Manufacture of Phonograph Matrixes, The..... 406

- Willcox, Dudley. \*Melting Metal at 2000° (5232° F.)..... 290

- Willis, Wm. A. \*New Uses for Metals..... 1

- Wolf, F. L. \*Reclaiming Brass Foundry Sands..... 488

- Woodmansee, E. W. Cleaning Brass..... 67

**Y**

- Yates, Raymond, Francis. \*The Metal Trades and the Radio Industry..... 53

**EDITORIALS****A**

- Accelerated Corrosion Test..... 284

- Aluminum in Politics..... 452

- Aluminum Statistics..... 285

- American Copper Consumption..... 406

- American Electro-Platers' Society..... 284

- American Foundrymen's Association..... 409

**B**

- Business Conditions..... 158

- Business Situation, The..... 495

**C**

- Commerce Department and Metals..... 494

- Co-operative Purchasing..... 201

- Copper Consumption..... 72

- Corrosion Resistant Alloys..... 326

**E**

- Electric Brass Furnaces..... 243

- Electro-Platers' Convention, The..... 242

- Electro-Plating Process..... 200

- Eliminating Useless Lines..... 158

- Ex-President Wilson..... 73

- Eye Sight Conservation..... 327

**F**

- Foundry Apprentices..... 494

- Foundrymen's Convention, The..... 452

**G**

- "Gold Filled"..... 453

- Guaranteed Metal Products..... 200

**H**

- Hot Zinc Coating..... 117

**I**

- Industrial Standardization..... 408

- Institute of Die Casting..... 285

- Institute of Electro-Plating..... 116

- Institute of Metals Division..... 116

**M**

- Metal Consumption..... 242

- Metal Dust Explosions..... 72

|   |     |
|---|-----|
| Metal Finishers' Exposition, The.....   | 201 |
| Metal Industry in New York.....         | 327 |
| Metal Industry of Age, The.....         | 25  |
| Metal Research.....                     | 366 |
| Metal Reserves.....                     | 158 |
| Muscle Shouls and the Light Metals..... | 200 |

**N**

|                  |     |
|------------------|-----|
| Nickel Itch..... | 284 |
|------------------|-----|

**P**

|                                   |     |
|-----------------------------------|-----|
| Platers' Research Conference..... | 458 |
| Practical College Training.....   | 495 |
| Preventing Accidents.....         | 366 |
| Prize Awards for Platers.....     | 159 |
| Profits and Losses.....           | 400 |

**R**

|  |     |
|--|-----|
| Recognizing Ability.....                           | 367 |
| Research in Copper and Brass.....                  | 116 |
| Retrospective Review of 1923—Outlook for 1924..... | 24  |
| Roosevelt Medals of Honor.....                     | 409 |

**S**

|   |     |
|---|-----|
| Secondary Smelting Merger.....          | 243 |
| Ships Without Sails or Engines.....     | 495 |
| Shop Problems and Answers.....          | 212 |
| Silver Producers' Association.....      | 469 |
| Special Car to Platers' Convention..... | 201 |
| Standard Precious Metal Alloys.....     | 337 |

**T**

|  |     |
|--|-----|
| Theory and Practice.....                 | 243 |
| Trade Associations.....                  | 72  |
| Trend in the Science of Metals, The..... | 326 |

**V**

|                      |     |
|----------------------|-----|
| Value of Silver..... | 117 |
|----------------------|-----|

**Z**

|                        |     |
|------------------------|-----|
| Zinc for Building..... | 201 |
|------------------------|-----|

**NEW BOOKS****A**

|  |     |
|--|-----|
| Appraisers' and Adjusters' Handbook..... | 411 |
|--|-----|

**B**

|                                  |     |
|----------------------------------|-----|
| Book of Standards.....           | 493 |
| Book of Tentative Standards..... | 496 |

**C**

|  |     |
|--|-----|
| Combination.....   | 496 |
| Copper Flashings.....  | 203 |
| Corrosion Tests and Materials of Construction for Chemical Engineering Annals..... | 293 |
| Cost Accounting in the Metal Stamping Plant.....                                   | 286 |
| Crain's Market Data Book and Directory of Glass, Trade and Technical Publications  | 286 |

**D**

|  |     |
|--|-----|
| Die Legierungen (Alloys).....            | 496 |
| Die Metallfarbung (Coloring Metals)..... | 493 |

**E**

|  |     |
|--|-----|
| Electro Deposition of Metals.....  | 328 |
| Electro-Metallurgy.....  | 160 |
| First (Experimental) Report to the Atmospheric Corrosion Research Committee of the British Non-Ferrous Metals Research Association)..... | 286 |

**H**

|   |     |
|---|-----|
| Henley's Twentieth Century Book of Recipes, Formulas and Processes..... | 493 |
|---|-----|

**I**

|  |     |
|--|-----|
| Industrial Fellowships of the Mellon Institute of Industrial Research..... | 286 |
| Industrial Management.....   | 119 |
| Industrial Publishing.....   | 27  |

**J**

|   |     |
|---|-----|
| Journal of the British Institute of Metals..... | 413 |
|---|-----|

**L**

|  |     |
|--|-----|
| Laboratory Manual of Machine Shop Practice, A..... | 27  |
| Lead.....  | 27  |
| Lead—The Precious Metal.....                       | 203 |

**M**

|   |     |
|---|-----|
| Management's Handbook.....                      | 454 |
| Metal Statistics for 1924.....                  | 244 |
| Metallurgy of Aluminum and Aluminum Alloys..... | 454 |
| Modern Electro-Plating.....                     | 119 |

**N**

|                                 |     |
|---------------------------------|-----|
| Notes on Chemical Analysis..... | 100 |
|---------------------------------|-----|

**P**

|  |     |
|--|-----|
| Personal Management.....                                       | 27  |
| Polishing and Plating of Metals.....                           | 454 |
| Popular Research Narratives.....                               | 244 |
| Principles of Electro-Plating and Electro-Forming.....         | 118 |
| Proceedings of the American Society for Testing Materials..... | 110 |

**R**

|   |     |
|---|-----|
| Regional Plan of New York and Its Environs..... | 411 |
|---|-----|

|  |     |
|--|-----|
| Research Information Surveys on Corrosion of Metals, No. 4-6. Zinc, Tin, Lead..... | 496 |
|--|-----|

**S**

|   |     |
|---|-----|
| Science of Metals, The.....                           | 411 |
| Steinmetz and His Discoverer.....                     | 323 |
| Strength and Structure of Steel and Other Metals..... | 27  |
| Structure of Crystals.....                            | 496 |

**T**

|                             |     |
|-----------------------------|-----|
| Theoretical Metallurgy..... | 100 |
|-----------------------------|-----|

**V**

|                    |     |
|--------------------|-----|
| Vanadium Ores..... | 323 |
|--------------------|-----|

**Y**

|  |     |
|--|-----|
| Year Book of the American Bureau of Metal Statistics.....      | 244 |
| Year Book of the National Association of Cost Accountants..... | 323 |

**TECHNICAL PAPERS****A**

|   |     |
|---|-----|
| Amphoteric Character of Gelatine and Its Bearing on Certain Electrochemical Phenomena, The..... | 497 |
| Annealing of Brass Tubing in the Electric Furnace.....  | 497 |
| Available Data on the Properties of Non-Ferrous Metals and Alloys at Various Temperatures.....  | 244 |

**C**

|  |    |
|--|----|
| Corrosion in Mine Waters.....          | 27 |
| Corrosion of Brass and Grain Size..... | 27 |

**D**

|  |     |
|--|-----|
| Determination of Iridium in Platinum Alloys by the Method of Fusion with Lead..... | 244 |
|--|-----|

**E**

|   |     |
|---|-----|
| Economics of the Copper, Brass and Nickel-Silver Industries in 1924.....                            | 329 |
| Effect of Cheap Oxygen on Jewelry Soldering, and Some Other Processes, The.....                     | 203 |
| Effect of Hydrogen-ion Concentration on the Submerged Corrosion of Steel, The.....                  | 368 |
| Effect of Severe Cold Working on Scratch and Brinell Hardness.....                                  | 74  |
| Electric Furnace for Continuous Hardening and Tempering Wire.....                                   | 497 |
| Electrolytic Theory of Corrosion, Comments on Wilder D. Bancroft's Recent Paper on Above Topic..... | 497 |
| Engineering Standards Committee.....  | 329 |

**H**

|  |     |
|--|-----|
| Hazard of Flammable Aluminum Dust.....                         | 26  |
| High Voltage Phenomena.....                                    | 203 |
| Industrial Applications of Metals at Various Temperatures..... | 244 |

**I**

|  |     |
|--|-----|
| Influence of Emulsoids Upon the Rate of Solution of Iron, The.....                 | 197 |
| Internal Stress in Brass Tubing.....   | 329 |
| Introduction of Carbonaceous Matter in Electro-Deposited Iron and Nickel, The..... | 497 |

**L**

|                               |     |
|-------------------------------|-----|
| Light Alloys of Aluminum..... | 329 |
|-------------------------------|-----|

**M**

|  |     |
|--|-----|
| Metallurgical Education of University Rank in Great Britain..... | 329 |
|--|-----|

|   |     |
|---|-----|
| Metalurgical Research in Government Laboratories..... | 329 |
|---|-----|

|   |     |
|---|-----|
| Methods for the Recovery of Platinum, Iridium, Palladium, Gold and Silver from Jewelers' Waste..... | 110 |
|---|-----|

|  |     |
|--|-----|
| Methods of Conducting Corrosion Tests..... | 203 |
|--|-----|

|   |     |
|---|-----|
| Methods of Testing on Various Temperatures and Their Limitations..... | 368 |
|---|-----|

|                                   |     |
|-----------------------------------|-----|
| Micro-Chemistry of Corrosion..... | 497 |
|-----------------------------------|-----|

|                            |     |
|----------------------------|-----|
| Molding Sand Research..... | 328 |
|----------------------------|-----|

**N**

|                            |     |
|----------------------------|-----|
| Nickel and Its Alloys..... | 411 |
|----------------------------|-----|

|  |     |
|--|-----|
| Notes on Corrosion Testing by Different Immersion Methods..... | 497 |
|--|-----|

**P**

|                      |     |
|----------------------|-----|
| Permanent Molds..... | 328 |
|----------------------|-----|

|   |     |
|---|-----|
| Physical Characteristics of Specialized Refractories, Part V..... | 497 |
|---|-----|

|                                       |     |
|---------------------------------------|-----|
| Physical Properties of Materials..... | 329 |
|---------------------------------------|-----|

|  |     |
|--|-----|
| Preparation of Artificial Silimanite for Refractory Use..... | 497 |
|--|-----|

|  |     |
|--|-----|
| Preparation of Metallic Tungsten and Some of Its Alloys..... | 411 |
|--|-----|

|   |     |
|---|-----|
| Preparation of Pure Alloys Including a Preliminary Study of Certain Electrical Properties of the System Aluminum-Magnesium..... | 411 |
|---|-----|

|   |     |
|---|-----|
| Present Commercial Methods of Melting Platinum..... | 203 |
|---|-----|

|  |     |
|--|-----|
| Present Tendencies in Electric-Brass Furnace Practice..... | 244 |
|--|-----|

|                       |     |
|-----------------------|-----|
| Pure Zinc Anodes..... | 329 |
|-----------------------|-----|

**R**

|  |     |
|--|-----|
| Range Boilers and Expansion Tanks..... | 308 |
|--|-----|

|  |     |
|--|-----|
| Relation Between Tarishing and Corrosion, The..... | 454 |
|--|-----|

|   |     |
|---|-----|
| Self Corrosion of Lead Cable Sheath.....                                    | 454 |
| Some Aspects of the Platinum Stamping Law.....                              | 203 |
| Specifications for Lubricants and Liquid Fuels and Methods for Testing..... | 304 |

**T**

|   |     |
|---|-----|
| Testing.....  | 119 |
| Thermal Expansion of Molybdenum.....  | 308 |
| Throwing Power, Cathode Potentials and Efficiencies in Nickel Deposition..... | 401 |

**W**

|  |     |
|--|-----|
| Wet-Process Enamels for Cast Iron..... | 119 |
|--|-----|

**CORRESPONDENCE AND DISCUSSIONS****A**

|                               |     |
|-------------------------------|-----|
| Abuses in Zincing.....        | 11  |
| American Copper in China..... | 202 |
| American Graphites.....       | 26  |
| Appreciation from Japan.....  | 26  |

**B**

|                              |     |
|------------------------------|-----|
| British Brass Foundries..... | 100 |
|------------------------------|-----|

**E**

|                               |     |
|-------------------------------|-----|
| Electro-Plating Problems..... | 202 |
|-------------------------------|-----|

**I**

|                                   |     |
|-----------------------------------|-----|
| Institute of Electro-Plating..... | 410 |
|-----------------------------------|-----|

**L**

|                        |     |
|------------------------|-----|
| Life of Crucibles..... | 118 |
|------------------------|-----|

**M**

|  |     |
|--|-----|
| Making Metal Patterns by Electro-Deposition..... | 73  |
| Mixing Molding Sand.....                         | 410 |

**N**

|                  |     |
|------------------|-----|
| Nickel Itch..... | 202 |
|------------------|-----|

**O**

|                  |     |
|------------------|-----|
| Oil of Salt..... | 286 |
|------------------|-----|

**P**

|                           |     |
|---------------------------|-----|
| Plating Auto Bumpers..... | 410 |
|---------------------------|-----|

**R**

|                                 |     |
|---------------------------------|-----|
| Reading the Metal Industry..... | 286 |
|---------------------------------|-----|

**S**

|                              |    |
|------------------------------|----|
| Streaky Brass Bedsteads..... | 26 |
|------------------------------|----|

**W**

|                            |     |
|----------------------------|-----|
| Working on Committees..... | 159 |
|----------------------------|-----|

**SHOP PROBLEMS****A**

|                                  |     |
|----------------------------------|-----|
| Acid Dip, Coloring Brass by..... | 412 |
|----------------------------------|-----|

**C**

|                 |    |
|-----------------|----|
| Acid Pipes..... | 75 |
|-----------------|----|

**D**

|                                |     |
|--------------------------------|-----|
| Adding Manganese to Brass..... | 330 |
|--------------------------------|-----|

**F**

|                               |     |
|-------------------------------|-----|
| Alloy for Food Container..... | 245 |
|-------------------------------|-----|

**G**

|                       |     |
|-----------------------|-----|
| Aluminum Bobbins..... | 287 |
|-----------------------|-----|

**H**

|                                  |     |
|----------------------------------|-----|
| Aluminum Castings, Cleaning..... | 287 |
|----------------------------------|-----|

**I**

|                                |     |
|--------------------------------|-----|
| Aluminum Castings, Porous..... | 453 |
|--------------------------------|-----|

**K**

|                               |     |
|-------------------------------|-----|
| Aluminum Manganese Alloy..... | 204 |
|-------------------------------|-----|

**L**

|                               |     |
|-------------------------------|-----|
| Aluminum Matte Finish on..... | 245 |
|-------------------------------|-----|

**M**

|   |     |
|---|-----|
| Aluminum Pressure Cookers, Cracked..... | 287 |
|---|-----|

**N**

|                               |     |
|-------------------------------|-----|
| Aluminum Radiator Shells..... | 204 |
|-------------------------------|-----|

**O**

|                         |     |
|-------------------------|-----|
| Aluminum Repairing..... | 456 |
|-------------------------|-----|

**P**

|                                 |    |
|---------------------------------|----|
| Aluminum Spider, Polishing..... | 29 |
|---------------------------------|----|

**R**

|                                    |     |
|------------------------------------|-----|
| Aluminum Stampings, Polishing..... | 413 |
|------------------------------------|-----|

**S**

|                      |     |
|----------------------|-----|
| Antimonial Lead..... | 412 |
|----------------------|-----|

**B**

|                      |     |
|----------------------|-----|
| Babbitt, Drossy..... | 120 |
|----------------------|-----|

**C**

|                          |     |
|--------------------------|-----|
| Babbitt, Recovering..... | 409 |
|--------------------------|-----|

**D**

|                                  |     |
|----------------------------------|-----|
| Babbitt, Removing Zinc from..... | 370 |
|----------------------------------|-----|

**F**

|                           |    |
|---------------------------|----|
| Ball Furnishing Soap..... | 28 |
|---------------------------|----|

**G**

|                                |     |
|--------------------------------|-----|
| Battery Plates, Lead from..... | 204 |
|--------------------------------|-----|

**H**

|                             |     |
|-----------------------------|-----|
| Bearings, Rolling Mill..... | 370 |
|-----------------------------|-----|

**I**

|                              |     |
|------------------------------|-----|
| Beds, Refinishing Brass..... | 413 |
|------------------------------|-----|

**J**

|                     |    |
|---------------------|----|
| Bells, Casting..... | 29 |
|---------------------|----|

**K**

|                              |     |
|------------------------------|-----|
| Belt Buckles, Finishing..... | 369 |
|------------------------------|-----|

**L**

|                          |     |
|--------------------------|-----|
| Black Dip for Brass..... | 455 |
|--------------------------|-----|

**M**

|                     |    |
|---------------------|----|
| Black on Brass..... | 28 |
|---------------------|----|

**N**

|                         |    |
|-------------------------|----|
| Black on Duralumin..... | 28 |
|-------------------------|----|

**O**

|                                |     |
|--------------------------------|-----|
| Blistered Gold and Silver..... | 330 |
|--------------------------------|-----|

**P**

|                            |     |
|----------------------------|-----|
| Blue on Steel, Bright..... | 455 |
|----------------------------|-----|

**R**

|                        |     |
|------------------------|-----|
| Bobbins, Aluminum..... | 287 |
|------------------------|-----|

**S**

|                             |     |
|-----------------------------|-----|
| Brass Plate, Tarnished      | 456 |
| Brass Plating Screws        | 412 |
| Brasses, Locomotive         | 413 |
| Brazing Solder              | 120 |
| Bright Blue on Steel        | 455 |
| Brine Solution, Metal for   | 499 |
| Bronze, Casting             | 330 |
| Bronze, Coloring Statuary   | 498 |
| Bronze, Flux for Phosphor   | 370 |
| Bronze, High Lead           | 161 |
| Bronze, Imitation Manganese | 370 |
| Bronze, Segregated          | 370 |
| Brown on Brass              | 369 |
| Brush Brass, Dull           | 455 |
| Brush Silver Solution       | 498 |
| Buckles, Finishing Belt     | 369 |
| Burnishing Soap, Ball       | 28  |

**C**

|                                    |     |
|------------------------------------|-----|
| Cadmium Plate, Painting            | 288 |
| Car Box Metal                      | 75  |
| Cast Gun Parts                     | 455 |
| Casting Bells                      | 29  |
| Casting Bronze                     | 330 |
| Casting Lighting Fixtures          | 120 |
| Casting, White Metal               | 288 |
| Castings, Cleaning Aluminum        | 287 |
| Castings, Drossy Brass             | 412 |
| Castings, Exploded Brass           | 29  |
| Castings, Nickel on Small Die      | 246 |
| Castings, Porous Aluminum          | 455 |
| Castings, Slush                    | 29  |
| Chloride from Scrap Silver, Silver | 162 |
| Cleaning Aluminum Castings         | 287 |
| Cloth, Metal Design on             | 205 |
| Coating Red Brass, Lead            | 287 |
| Cock Plug, Metal for Gas           | 288 |
| Coloring Brass by Acid Dip         | 412 |
| Coloring Copper                    | 330 |
| Coloring Statuary Bronze           | 498 |
| Container, Alloy for Food          | 245 |
| Cookers, Cracked Aluminum Pressure | 287 |
| Copper and Brass, Oxidizing        | 499 |
| Copper, Coloring                   | 330 |
| Copper, Melting Phosphor           | 161 |
| Copper, Mixing Lead and            | 75  |
| Copper Plate, Streaky              | 456 |
| Copper, Strip Nickel from          | 413 |
| Cracked Aluminum Pressure Cookers  | 287 |
| Cyanide Dip                        | 245 |
| Cyanide Dip                        | 369 |

**D**

|                                     |     |
|-------------------------------------|-----|
| Defective Journal Brass             | 498 |
| Dental Plates, Gold on              | 120 |
| Depositing Magnesium                | 331 |
| Design on Cloth, Metal              | 205 |
| Die Castings, Nickel on Small       | 246 |
| Dip, Coloring Brass by Acid         | 412 |
| Dip, Cyanide                        | 245 |
| Dip, Cyanide                        | 369 |
| Dip for Brass, Black                | 455 |
| Dross Samples, Sweating             | 458 |
| Drossy Babbitt                      | 120 |
| Drossy Brass Castings               | 412 |
| Dull Brush Brass                    | 455 |
| Duralumin, Black on                 | 28  |
| Dust from Grindings, Removing Emery | 76  |

**E**

|                                     |     |
|-------------------------------------|-----|
| Ebony and Silver Finish             | 498 |
| Electroplating Nickel Silver        | 245 |
| Electro Strip Solution              | 498 |
| Eliminating Zinc                    | 204 |
| Emery Dust from Grindings, Removing | 76  |
| Engraving on Brass                  | 120 |
| Engraving Steel Tape                | 369 |
| Etching Stop-off                    | 455 |
| Exploded Brass Castings             | 29  |

**F**

|                               |     |
|-------------------------------|-----|
| Faucet Plugs, Grease for      | 287 |
| Fine Grained Metal            | 245 |
| Finish, Ebony and Silver      | 498 |
| Finish on Aluminum, Matte     | 245 |
| Finish on Nickel, High        | 204 |
| Finish, Polychrome            | 76  |
| Finishing Belt Buckles        | 369 |
| Fixtures, Casting Lighting    | 120 |
| Floor, Foundry on Top         | 499 |
| Floor, Plating Room           | 288 |
| Flowers, Metallizing          | 331 |
| Flux for Phosphor Bronze      | 370 |
| Food Container, Alloy for     | 245 |
| Foundry on Top Floor          | 499 |
| Furnace Installation, Melting | 121 |

**G**

|                                     |     |
|-------------------------------------|-----|
| Gas Cock Plug, Metal for            | 288 |
| Gold and Silver, Blistered          | 230 |
| Gold, Imitation Platinum and White  | 121 |
| Gold on Brass, Imitation            | 331 |
| Gold on Dental Plates               | 120 |
| Grained Metal, Fine                 | 245 |
| Grease for Faucet Plugs             | 287 |
| Green Scum on Nickel                | 121 |
| Grey Iron, Tinning                  | 162 |
| Grindings, Removing Emery Dust from | 76  |
| Gun Parts, Cast                     | 455 |

**H**

|                            |     |
|----------------------------|-----|
| High Finish on Nickel      | 204 |
| High Lead Bronze           | 161 |
| High Lead Mixture          | 413 |
| High Tensile Brass         | 75  |
| High Tensile Metal, Mixing | 205 |
| Holes, Silver Plating over | 121 |

|                                   |     |
|-----------------------------------|-----|
| I                                 |     |
| Imitation Gold on Brass           | 331 |
| Imitation Manganese Bronze        | 370 |
| Imitation Platinum and White Gold | 121 |
| Ingots, Smooth Brass              | 499 |
| Installation, Melting Furnace     | 121 |
| Iron, Tinning Grey                | 162 |
| Itch, Nickel                      | 75  |

**J**

|                          |     |
|--------------------------|-----|
| Japanning Safety Pins    | 161 |
| Journal Brass, Defective | 498 |

**L**

|                            |     |
|----------------------------|-----|
| Lead and Copper, Mixing    | 75  |
| Lead, Antimonial           | 412 |
| Lead Bronze, High          | 161 |
| Lead Coating Red Brass     | 287 |
| Lead from Battery Plates   | 204 |
| Lead Mixture, High         | 413 |
| Lead, Stripping Tin and    | 456 |
| Licorice Powder            | 204 |
| Lighting Fixtures, Casting | 120 |
| Lime, Vienna               | 205 |
| Lining for Plating Tank    | 413 |
| Lining, Tank               | 288 |
| Linings, Metal for Tank    | 75  |
| Locomotive Brasses         | 413 |
| Locomotive Scrap           | 204 |

**M**

|                                 |     |
|---------------------------------|-----|
| Magnesium, Depositing           | 331 |
| Manganese Alloy, Aluminum       | 204 |
| Manganese Bronze, Imitation     | 370 |
| Manganese to Brass, Adding      | 330 |
| Matte Finish on Aluminum        | 245 |
| Melting Furnace Installation    | 121 |
| Melting Phosphor Copper         | 161 |
| Metal, Car Box                  | 75  |
| Metal Casting, White            | 288 |
| Metal Design on Cloth           | 205 |
| Metal, Fine Grained             | 245 |
| Metal for Brine Solution        | 499 |
| Metal for Gas Cock Plug         | 288 |
| Metal for Tank Linings          | 75  |
| Metal, Mixing High Tensile      | 205 |
| Metal Molds                     | 28  |
| Metal Patterns, White           | 246 |
| Metal Polish                    | 499 |
| Metal, Removing Zinc from White | 162 |
| Metal, Type                     | 246 |
| Metallizing Flowers             | 331 |
| Mill Bearings, Rolling          | 370 |
| Mixing High Tensile Metal       | 205 |
| Mixing Lead and Copper          | 75  |
| Mixing Molding Sand             | 331 |
| Mixture, High Lead              | 413 |
| Modeling Wax                    | 331 |
| Molding Sand, Mixing            | 331 |
| Molds, Metal                    | 28  |
| Molds, Permanent                | 28  |
| Molds, Plaster                  | 162 |

**N**

|                                   |     |
|-----------------------------------|-----|
| Needles, Rusted                   | 205 |
| Nickel Brass                      | 246 |
| Nickel from Copper, Strip         | 413 |
| Nickel, Green Scum on             | 121 |
| Nickel, High Finish on            | 204 |
| Nickel Itch                       | 75  |
| Nickel on Small Die Castings      | 246 |
| Nickel on Stereotype              | 246 |
| Nickel on Tin Sheet               | 76  |
| Nickel, Plotted                   | 76  |
| Nickel Plating Plant, Operating a | 161 |
| Nickel Silver, Electroplating     | 245 |
| Nickel Solution                   | 121 |
| Nickel Voltite                    | 121 |

**O**

|                                  |     |
|----------------------------------|-----|
| Operating a Nickel Plating Plant | 161 |
| Oxidizing Copper and Brass       | 498 |

**P**

|                                    |     |
|------------------------------------|-----|
| Painting Cadmium Plate             | 288 |
| Palladium Plating                  | 76  |
| Parts, Cast Gun                    | 455 |
| Patterns, White Metal              | 246 |
| Permanent Molds                    | 28  |
| Phosphor Bronze, Flux for          | 370 |
| Phosphor Copper, Melting           | 161 |
| Pins, Japanning Safety             | 161 |
| Pipes, Acid                        | 75  |
| Pitted Nickel                      | 76  |
| Plant, Operating a Nickel Plating  | 161 |
| Plaster Molds                      | 162 |
| Plate, Black on Silver             | 28  |
| Plate, Painting Cadmium            | 288 |
| Plate, Streaky Copper              | 456 |
| Plate, Tarnished Brass             | 456 |
| Plates, Gold on Dental             | 120 |
| Plates, Lead from Battery          | 204 |
| Plates, Stripping                  | 29  |
| Plating Over Holes, Silver         | 121 |
| Plating, Palladium                 | 76  |
| Plating Plant, Operating a Nickel  | 161 |
| Plating Room Floor                 | 288 |
| Plating Screws, Brass              | 412 |
| Plating on Steel, Tin              | 499 |
| Plating Tank, Lining for           | 413 |
| Plating Tank, Temporary            | 288 |
| Platinum and White Gold, Imitation | 121 |
| Plugs, Metal for Gas Cock          | 288 |
| Plugs, Grease for Faucet           | 287 |
| Polish, Metal                      | 499 |
| Polishing Aluminum Spider          | 29  |

|                                    |     |
|------------------------------------|-----|
| Polishing Aluminum Stampings       | 413 |
| Polychrome Finish                  | 76  |
| Porous Aluminum Castings           | 485 |
| Powder, Licorice                   | 204 |
| Pressure Cookers, Cracked Aluminum | 287 |

**R**

|                                    |     |
|------------------------------------|-----|
| Radiator Shells, Aluminum          | 204 |
| Rapid Silver Solution              | 162 |
| Recovering Babbitt                 | 499 |
| Red Brass, Lead Coating            | 287 |
| Refinishing Brass Beds             | 413 |
| Removing Emery Dust from Grindings | 76  |
| Removing Zinc from Babbitt         | 370 |
| Removing Zinc from White Metal     | 162 |
| Repairing Aluminum                 | 456 |
| Rheostat Wire Sizes                | 205 |
| Rolling Mill Bearings              | 370 |
| Room Floor, Plating                | 288 |
| Rusted Needles                     | 205 |

**S**

|                                    |     |
|------------------------------------|-----|
| Safety Pins, Japanning             | 161 |
| Samples, Sweating Dross            | 456 |
| Sand, Mixing Molding               | 331 |
| Scrap, Locomotive                  | 204 |
| Scrap Silver, Silver Chloride from | 162 |
| Screws, Brass Plating              | 412 |
| Scum on Nickel, Green              | 121 |
| Segregated Bronze                  | 370 |
| Sheet, Nickel on Tin               | 76  |
| Shells, Aluminum Radiator          | 204 |
| Silver, Blistered Gold and         | 330 |
| Silver Chloride from Scrap Silver  | 162 |
| Silver, Electropolating Nickel     | 245 |
| Silver Finish, Ebony and           | 498 |
| Silver Plate, Black on             | 28  |
| Silver Plating Over Holes          | 121 |
| Silver Solution, Brush             | 498 |
| Silver Solution, Rapid             | 162 |
| Sizes, Rheostat Wire               | 205 |
| Slush Castings                     | 29  |
| Small Die Castings, Nickel on      | 246 |
| Smooth Brass Ingots                | 439 |
| Soap, Ball Burnishing              | 28  |
| Solder, Brazing                    | 120 |
| Solution, Brush Silver             | 198 |
| Solution, Electro Strip            | 498 |
| Solution, Metal for Brine          | 199 |
| Solution, Nickel                   | 121 |
| Solution, Rapid Silver             | 162 |
| Spider, Polishing Aluminum         | 29  |
| Stampings, Polishing Aluminum      | 413 |
| Statuary Bronze, Coloring          | 198 |
| Steel, Bright Blue on              | 455 |
| Steel, Tin Plating on              | 499 |
| Steel Tape, Engraving              | 369 |
| Stereotype, Nickel on              | 246 |
| Stop-Off, Etching                  | 455 |
| Streaky Copper Plate               | 436 |
| Strip Nickel from Copper           | 413 |
| Strip Solution, Electro            | 198 |
| Stripping Plates                   | 29  |
| Stripping Tin and Lead             | 456 |
| Sweating Dross Samples             | 458 |

**T**

|                            |     |
|----------------------------|-----|
| Tank Lining                | 288 |
| Tank, Lining for Plating   | 413 |
| Tank Linings, Metal for    | 75  |
| Tank, Temporary Plating    | 288 |
| Tape, Engraving Steel      | 369 |
| Tarnished Brass Plate      | 6   |
| Temporary Plating Tank     | 288 |
| Tensile Brass, High        | 75  |
| Tensile Metal, Mixing High | 205 |
| Tin and Lead, Stripping    | 456 |
| Tin Plating on Steel       | 198 |
| Tin Sheet, Nickel on       | 76  |
| Tinning Grey Iron          | 122 |
| Top Floor, Foundry on      | 205 |
| Transformer                | 205 |
| Type Metal                 | 246 |

**V**

|             |     |
|-------------|-----|
| Vienna Lime | 205 |
|-------------|-----|

|                  |     |
|------------------|-----|
| Volitite, Nickel | 121 |
|------------------|-----|

**W**

|                                    |     |
|------------------------------------|-----|
| Wax, Modeling                      | 331 |
| White Gold, Imitation Platinum and | 121 |
| White Metal Casting                | 288 |
| White Metal Patterns               | 246 |
| White Metal, Removing Zinc from    | 162 |
| Wire Sizes, Rheostat               | 205 |

**Z**

|                                 |     |
|---------------------------------|-----|
| Zinc, Eliminating               | 204 |
| Zinc from Babbitt, Removing     | 370 |
| Zinc from White Metal, Removing | 162 |

**PATENTS****A**

|   |     |
|---|-----|
| Abrasive Compound, 1,504,607. Joseph A. Menard, Seattle, Wash.                      | 411 |
| *Abrasive Wheel Dresser, 1,486,844. Henry K. Spencer, Watertown, Mass.              | 206 |
| Acid-Resisting Alloy, 1,473,208. Alvan W. Clement, E. Cleveland, Ohio.              | 39  |
| Alloy, 1,496,269. Itiro Iytaka, Tokyo, Japan  | 333 |
| Alloy, 1,494,254. Edward Kiam, New York and M. G. Collins, Scarsdale, N. Y.         | 332 |
| Alloy and Apparatus Made Therefrom, 1,510,242. Aladar Pacz, Cleveland Heights, Ohio | 509 |

- A**
- Alloy Comprising Iron, Nickel, Chromium, Tungsten or Molybdenum, 1,504,338. Pierre Girin, Paris, France..... 414
  - Alloy Flux for Soldering Aluminum and Process for Forming Same, 1,493,327. Wm. G. Bolus, Rhineander, Wis. .... 163
  - Alloys, Method of Making, 1,494,393. Richard Walter, Dusseldorf, Germany.... 332
  - Aluminum Alloy, 1,480,846. Alfred Von Zeerleder, Neuhausen, Switzerland .... 77
  - Annealing Furnace, 1,481,338. C. C. Baldwin, Perth Amboy, N. J. .... 122
  - \*Anode and Carrier Therefor, 1,478,853. Harry L. Haas, New York, N. Y. .... 77
  - \*Anode, Electropolating, 1,474,460. Edwin M. Beck, Greensburg, Ind. .... 80
  - Anti-Friction Bearings and Compounds, Process of Manufacturing, 1,482,414. Carl Schmidt, Berlin-Tegel, Germany.... 163
  - \*Antifriction Metals, Process for Making, 1,470,859. William Koehler, Cleveland, Ohio ..... 77
  - \*Apparatus, Electropolating, 1,475,108. Louis Pothoff, deceased. By Hamilton Trust Company, Brooklyn, N. Y. .... 30
  - Apparatus for Applying Coating, 1,475,372. Herbert W. Day, Wollaston, Mass. .... 30
- B**
- Bearing Metal Alloy, 1,502,321. Karl Muller and Wilhelm Sander, Essen, Germany ..... 371
  - Bearing Metals and Process of Using Same, Hardening Alloy for, 1,502,425. Robert Hughes Evans, Detroit, Mich. .... 371
  - \*Blowpipe for Metal Soldering, 1,485,115. Frederick Robinson, New York, N. Y. .... 163
  - Boric Acid in Nickel-Containing Solution, Method of Determining, 1,504,207. Edwin M. Baker, Ann Arbor, Mich. .... 414
  - Brazing and Welding, Compound for, 1,502,444. Arthur J. Knowles, Wilmington, Del. .... 371
  - Buffing Wheel, 1,504,272. Charles P. Schlegel, Rochester, N. Y. .... 414
  - Buffing Wheels, Method of Cutting Materials for, 1,500,900. Wesley F. Hall, Matawan, N. J. .... 371
- C**
- \*Carboy Lift, 1,487,060. R. B. Shiffner, Kansas City, Mo. .... 206
  - Casting Dental Plates in Metal, Apparatus for, 1,475,906. Herbert L. Holiday, and F. W. Munn, Melbourne, Victoria, Australia ..... 31
  - Casting Light Metal Alloys, Method of, 1,476,192. Wm. H. Veney, Cleveland, Ohio, and E. C. Burdick, Midland, Mich. .... 31
  - Casting Machine, 1,498,675. Erwin L. Wilke, Hammond, Ind. .... 371
  - Casting, Method of, 1,491,817. Charles Pack, Elmhurst, N. Y. .... 289
  - Castings of Aluminum Alloys, Making, 1,508,556. Zay Jeffries, Cleveland Heights, Ohio, and R. S. Archer, East Cleveland, Ohio ..... 457
  - Castings, Method of and Apparatus for Making, 1,508,889. John Kralund, and C. H. Duckworth, Brooklyn, N. Y. Marcus Stern, Toledo, Ohio ..... 457
  - \*Castings, Process and Device for Making Sharply Defined, 1,477,509. Hugo Lohmann, Berlin-Johannisthal, Germany.... 31
  - Chromium or Alloys of Chromium, Method for Producing, 1,508,557. B. M. Sture Kalling, and Sven D. D. Troilhatten, Sweden ..... 457
  - \*Clamp for Lead Molds, 1,486,022. Chester M. Angell, Chicago, Ill. .... 103
  - Cleaning Metal Surfaces, Material for and Method of, 1,484,090. P. H. Walker and J. H. Bower, Washington, D. C. .... 163
  - Coating Metal Articles, Process and Apparatus for, 1,496,306. Harvey F. Girvin, Ansonia, Conn. .... 333
  - Coating Metals, Flux Therefor, Etc., Method of, 1,501,293. Richard Staack, N. Bergen, N. J. .... 371
  - Coating, Method of, 1,495,487. John Bertrand Johnson, Elmhurst, N. Y. .... 333
  - \*Coating Sheet Steel with Aluminum, Process of, 1,488,533. Samuel Peacock, Wheeling, W. Va. .... 247
  - \*Cold Spouting of Tubes and Thin-Walled Metal Pipes of Lead, Tin and Especially Aluminum, Method for the, 1,480,843. Fritz Singer, Nuremberg, Germany.... 122
  - \*Compacting Head for Wire-Covering Machines, 1,480,820. Wm. E. Cook, St. George, N. Y. .... 247
  - Compound, Rust-Removing, 1,473,529. J. J. Varn Buhler, Detroit, Mich. .... 30
  - Container, Evacuated, 1,498,908. Colin G. Fink, East Orange, N. J. .... 371
  - Conveying Mechanism, 15,754. Reissued. P. T. Taylor, Matawan, N. J. .... 122
  - Copper and the Product Thereof, Process for Treating, 1,502,867. S. B. Leiter, Schenectady, N. Y. .... 414
  - Copper, Method of Treating, 1,507,340. R. J. Cunningham and Geo. H. King, Salt Lake City, Utah. .... 457
  - Copper Trolley Wheels, Method of Producing, 1,494,400. Wm. S. Bidle, Cleveland, Ohio ..... 332
- D**
- Cores for Foundry Work, Manufacture of, 1,477,064. Emil Kleinschmidt, Frankfort-on-the-Main, and C. Fohr, Miesbach, Oberbayern, Germany ..... 31
  - \*Cutting Metal, Apparatus for and Method of, 1,479,056. John T. Cummings, Benj. H. Daulton, Frank W. Taylor, Clarence J. Robinson, all of Wilmington, Ohio.... 77
- E**
- Dental Casting Machine, 1,493,602. Thomas A. Nixon, Atlanta, Ga. .... 332
  - Die Casting and Method of Welding Same to a Metallic Surface, 1,491,879. Charles Pack, Elmhurst, N. Y., and S. H. Kuech, Brooklyn, N. Y. .... 289
  - \*Die-Casting Apparatus, 1,476,257. J. Kralund and C. H. Duckworth, Brooklyn, N. Y. .... 31
  - Die-Casting Machine, 1,500,438. Rueben H. Williams, Flint, Mich. .... 457
  - Die-Casting Metal, 1,506,772. Charles Pack, Elmhurst, N. Y. .... 457
  - Die-Casting, Method of, 1,491,810. Charles Pack, Elmhurst, N. Y. .... 289
  - Die Casting, Process for, 1,494,109. Otto De Cardy, Chicago, Ill. .... 332
  - Die for Die-Casting, 1,510,002. H. Rau, Hamilton Beach, N. Y. .... 500
  - Drawbench Apparatus, 1,496,137. August Sundh, Hastings-on-Hudson, N. Y. .... 333
  - Drawbench for Metal Tubing, 1,496,125. David C. Larson, Yonkers, N. Y. .... 333
- F**
- \*Electric Furnace, 1,478,375. Morris H. Bennett, Waterbury, Conn. .... 77
  - \*Electric Furnace, 1,481,228. Tito Rondelli, London, England ..... 122
  - Electric Furnace, 1,506,281. Thaddeus F. Baily, Alliance, Ohio. .... 414
  - Electrode, 1,510,541. Charles L. Burdick, New York, N. Y. .... 500
  - Electrode Element for Galvanic Batteries and Method of Producing the Same, 1,486,955. L. R. S. Dunham, Bloomfield, N. J. .... 206
  - Electrodeposited Article and Method of Making Same, 1,513,119. Charles P. Madson, New York, N. Y. .... 500
  - Electrodepositing Lead Upon Iron, Process for, 1,505,100. B. S. Summers, Port Huron, Mich. .... 414
  - Electrodeposition, Process of, 1,475,973. B. S. Summers, Port Huron, Mich. .... 31
  - Electrode Suspension Device, 1,484,194. Oscar E. Servis, Chicago, Ill. .... 103
  - \*Electrogalvanizing, Apparatus for, 1,484,653. F. Kirschner, Vienna, Austria. .... 163
  - Electrolytic Metal and Apparatus Therefor, Art of Making, 1,483,722. F. A. Eustis, Milton, Mass. .... 163
  - Electrolytic Process, 1,487,124. James R. Stack, Perth Amboy, N. J. .... 206
  - Electrolytic Refining of Tin, 1,487,136. H. H. Alexander, Westfield, N. J. .... 206
  - Electrolytic Tin, 1,487,111. Clarence P. Linville, Elizabeth, N. J. .... 206
  - Electroplating Apparatus, 1,501,946. Wesley F. Hall, Matawan, N. J. .... 371
  - Electroplating Apparatus, 1,504,700. J. L. Mujica, Brooklyn, N. Y. .... 414
  - Electroplating Apparatus, 1,505,424. F. G. Purinton, Waterbury, Conn. .... 414
  - Electroplating Machine, 1,509,534. G. Todd, Millburn, N. J. .... 457
  - \*Electroplating, Method of, 1,473,060. Edward N. Taylor, St. Louis, Mo. .... 80
  - Enameling Ware, 1,496,505. Harold F. Whittaker, Carneys Point, N. J., and T. Baker, Wilmington, Del. .... 333
  - Enameling of Metals, Wires and Metal Structures, Process for, 1,495,632. Louis De Raphelis-Soissan, Marseilles, France. .... 333
  - \*Extruding Brass and Like Material, Method of and Means for, 1,479,437. W. R. Webster, Bridgeport, Conn. .... 77
- G**
- \*Finished Coat on Strips of Metal, Apparatus for and Method of Producing a, 1,490,888. Daniel J. Cronin, Derby, Conn. .... 289
  - Forming Brass Spring Strips for Radiators, Machine for, 1,511,340. George H. Lober, Toledo, Ohio ..... 500
  - Forming Metal Tubes, Machine for, 1,510,586. Leonard D. Davis, Erie, Pa. .... 500
  - Foundry Sand Mixer, 1,508,031. Herbert S. Simpson, Chicago, Ill. .... 457
  - Furnace for Melting Stereo and Similar Metals, and Other Materials, 1,483,030. Herbert W. V. Wilson, Meols, England. .... 103
- H**
- \*Galvanizing Chain, Apparatus for, 1,480,308. Winford G. Milne, Hamilton, Ont., Can. .... 247
  - Galvanizing Machine, 1,498,290. Harley D. Pennington, Pittsburgh, Pa. .... 371
  - Grinding Machine, 1,483,748. Francis C. Sanford, Bridgeport, Conn. .... 163
- I**
- \*Induction Furnace, 1,479,582. Charles A. Brayton, Jr., Cleveland, Ohio. .... 77
  - \*Insulated Wire-Making Machine, 1,480,006. Wm. E. Cook, St. George, N. Y. .... 247
  - Iron-Tin Alloy, Process of Forming, 1,473,133. H. H. Alexander, Westfield, N. J. .... 206
- L**
- Lacquering Machine, 1,500,467. Wm. H. Pond, Providence, R. I. .... 371
  - Lead-Alkali-Metal Alloy, Process of Making a, 1,500,227. Wm. S. Calcott, Penns Grove, N. J. .... 371
  - Lead Alloys, Manufacture of, 1,500,004. Walter Mathesius and Hans Mathesius, Charlottenburg, Germany ..... 371
  - Lead Molding for Electrotypes, Process and Backing for Use in, 1,505,082. Harry M. Blaets, Philadelphia, Pa. .... 414
  - Lining for Metallurgical Purposes, Refractory, 1,492,685. Edwin W. Hale, Greenwich, Conn. .... 332
  - Lock for Foundry Flasks, 1,493,117. George F. Laughran, Boston, Mass. .... 332
- M**
- \*Machine for Casting Bushings, 1,474,484. Thure Larsson, Worcester, Mass. .... 30
  - Magnesium Alloys, Method for Rolling, 1,480,870. Felix Thomas, Frankfort-on-the-Main, Germany ..... 122
  - Magnesium and Alloys Comprising the Same, Treating, 1,477,922. Emil Woerner, Schwanheim-on-the-Main, and Felix Thomas, Frankfort-on-the-Main, Germany ..... 31
  - Magnesium and Magnesium Alloys by Etching, Method of Coloring, 1,480,869. Felix Thomas, Frankfort-on-the-Main, Germany ..... 122
  - Manganese or Manganese Alloys Poor in Carbon and Silicon, Process for the Manufacture of, 1,480,267. B. M. S. Kalling and Sven D. Daniell, Troilhatten, Sweden ..... 122
  - Metal and Its Manufacture, 1,508,241. Aladar Pacs, Cleveland, Ohio. .... 457
  - Metal and Process of Making It, Protected, 1,501,887. Frederick M. Crapo, Muncie, Ind. .... 371
  - Metal-Bearing Solution, Process for Recovering Values from, 1,492,283. F. M. Becket, New York ..... 289
  - Metal Bearing Solutions, Process for Recovering Values from, 1,492,282. F. M. Beckett and A. L. Feild, New York. .... 289
  - Metal-Disintegrating Apparatus, 1,501,449. Everett J. Hall, Passaic, N. J. .... 371
  - Metal for Coating, Process and Material for Preparing, 1,503,443. James H. Gravel, Elkins Park, Pa. .... 414
  - Metal Powder or Dust, Process for the Production of, 1,495,961. Minton H. Newell, Palo Alto, Calif., and Evald Anderson, Alhambra, Calif. .... 333
  - Metal Sheets, Wire, Tubes, Cylinders, and Other Articles, Continuous Automatic Process for the Production of, 1,494,152. Sherard Osborn Cowper-Coles, Sunbury-on-Thames, England ..... 332
  - \*Metal-Working Torch, 1,485,033. A. F. Jenkins, Baltimore, Md. .... 163
  - Metallic Coatings on Metals, Process for the Production of Glossy, 1,491,381. Alexander Classen, Aachen, Germany ..... 289
  - Metallic Leaf, Process of Making Decorative, 1,490,891. J. A. C. Fichttmuller, Stapleton, N. Y. .... 289
  - \*Mold for Annular Castings, 1,490,482. Wm. J. Beardson, Detroit, Mich. .... 247
  - \*Molding, 1,489,726. John R. Wood, Newark, N. J. .... 247
  - Molding, 1,491,754. John Scherner, Milwaukee, Wis. .... 289
  - \*Molding Apparatus, 1,480,748. Henry L. Demmler, Keweenaw, Ill. .... 122
  - \*Molding Machine, 1,479,287. John W. Darsley, Racine, Wis. .... 77
  - \*Molding Machine, 1,480,749. Henry L. Demmler, Keweenaw, Ill. .... 122
  - Molding Machine, 1,482,912. F. J. Wood, Des Moines, Iowa ..... 332
  - Molding Machine, 1,495,090. Wilfred Lewis, Haverford, Pa. .... 332
  - \*Molding Machine, Foundry, 1,479,938. Robert Dufus, Lutterworth, England. .... 77
  - \*Molding Machine, Rock-Over, 1,490,289. George E. Pickup, Newark, Ohio. .... 247
  - Molding Machine, Rock-Over, 1,493,731. Wm. P. Krause, Chicago, Ill. .... 332
  - Molding, Method of, 1,505,724. Wm. H. Nichols, Wilkinsburg, Pa. .... 414
  - \*Molds, Method of and Machine for Making, 1,480,750. Henry L. Demmler, Keweenaw, Ill. .... 122
  - \*Molten Steel or Metal Into Ingot or Like Molds, Pouring or Teeming of, 1,474,261. Harold H. Hosack, Farnham, England. .... 30
- N**
- Nickel Alloy, 1,501,906. Noah Victor Hybinette, New York, N. Y. .... 371
  - Nickel from Impure Oxides of Nickel, Process of Manufacture of Ingots of pure, 1,480,212. Jacques de Fonds Lamotte, Paris, France ..... 122

## THE METAL INDUSTRY

Nickel Plating, Process of and Means for, 1,504,206. Edwin M. Baker, Ann Arbor, Mich. .... 414  
Non Ferrous Melting Furnace, 1,500,277. Conrad Werra, Waukesha, Wis. .... 437  
Nozzle for Atomizing Molten Metal, 1,511,215. J. H. Calbeck, Joplin, Mo. .... 500

**P**

\*Pickling Apparatus, 1,400,515. Frank D. Kalcak, Woodlawn, Pa. .... 289  
Pickling Metal Plates and Blanks, Machine for, 1,491,195. Edward W. Burgess, Milwaukee, Wis. .... 289  
Polishing Composition, 1,492,098. James M. Owen, Emerson, Ark. .... 332  
Polishing Metals, Means for, 1,498,642. Thorvald Olsen Aalgaard, Gaddaden, Norway .... 371  
Polishing or Buffing Device, 1,510,116. Arthur L. Van Meter, New Orleans, La. .... 500  
Polishing Wheel, 1,507,836. Clarence R. King, Worcester, Mass. .... 457  
Pure Chromium by Electrolysis, Process of Producing, 1,498,845. George Grube, Stuttgart, Germany .... 323

**R**

Recovering Occluded Tin, 1,487,135. H. H. Alexander, Westfield, N. J. .... 206  
\*Recovering Tin, Process of, 1,487,125. J. R. Stack, Perth Amboy, N. J. .... 206  
Recovering Tin, Process of, 1,487,134. H. H. Alexander, Westfield, N. J. .... 206  
Refined Copper from Copper Oxide, Treatment of, 1,506,243. Walter G. Perkins and W. H. Beasley, London, England. .... 457  
Refining Tin and Antimony, Process for, 1,475,422. George Bonnard, Plombières St. Marcel, France .... 30  
Refractory Article and Method of Making the Same, 1,483,507. C. J. Brockbank, Philadelphia, Pa. .... 163  
\*Removing Paint, Enamel, Etc., Method of, 1,476,909. L. C. Moore and W. J. Jackson, Dallas, Texas .... 31  
Rust and Grease Remover, 1,496,506. Gleb L. Williams, Detroit, Mich. .... 333  
Rust-Dissolving Liquid, 1,510,067. Erik J. Norberg, Everett, Wash. .... 500  
Rustproofing by Coating with Cadmium, Process of, 1,504,298. Wm. A. Wissler and Chad H. Humphries, Kokomo, Ind. .... 414  
Rustproofing Process and Compound, 1,493,012. Charles E. Abraham, Detroit, Mich. .... 322

**S**

\*Safety Device for Pyrometers, 1,480,920. Richard P. Brown, Philadelphia, Pa. .... 247  
Sand-Blast Apparatus, 1,401,663. C. E. Billings, New Haven, Conn., and D. S. Sammis, Stratford, Conn. .... 289  
Sand-Blasting Apparatus, 1,511,025. George W. Christoph, Warehouse Point, Conn. .... 500  
Scrap Battery Plates, Method of Recovering, 1,492,241. C. C. Carpenter, Niagara Falls, N. Y. .... 289  
Scrap Metal and Recovering By-Products Therefrom, Process of Melting, 1,502,129. Geo. H. Starmann and Henry Lindenberger, Chicago, Ill. .... 371  
Sheet-Metal Spinning Machine, 1,500,261. George E. Page, Rochester, N. Y. .... 371  
Sherardizing, Method of, 1,513,349. Otto V. Stewart, Wilkinsburg, Pa., and L. Mc Culloch, Pittsburgh, Pa. .... 500  
Slabs, Art of Casting Metal, 1,491,964. Egbert Moxham, Great Neck, N. Y. .... 289  
Smelting Apparatus, 1,505,495. R. Rodrian, New York .... 414  
\*Soldered Tube, Method of Manufacturing, 1,475,258. Harry W. Bundy, Detroit, Mich. .... 30  
Soldering Aluminum, Device for, 1,483,337. M. S. Corat, Bachelet de Pesay, Carouge, Switzerland .... 163  
\*Soldering Apparatus, 1,470,783. Frank F. Bentley, Warren, Ohio .... 77  
Soldering Iron, 1,478,868. Anton E. Butkovich, Chicago, Ill. .... 77  
\*Soldering Machine, 1,478,696. Herman O. Bohme, New York, N. Y. .... 77  
Soldering Machine, 1,493,035. Charles Gueritey, Passaic, N. J. .... 332  
\*Soldering, Means for, 1,490,087. Julius Brenzinger, Fairfield, Conn. .... 247

**T**

Testing Machine, 1,406,836. B. C. Batchelder, Brooklyn, N. Y. .... 333  
Testing Platinum Alloys, Method of and Apparatus for, 1,498,073. Adolf Cohn, New York, N. Y. .... 333  
Thrust Bearing and Method of Making Same, 1,496,809. Carl W. Johnson, Cleveland, Ohio .... 333  
Tin Sinter and Method of Producing Same, 1,487,132. H. H. Alexander, Westfield, N. J. .... 206  
\*Treating Metal, Method for, 1,474,955. R. E. Bradley and C. R. Webber, Baltimore, Md. .... 30  
Treating Metals, Compound for and Method of, 1,485,025. Matthew Green, Detroit, Mich. .... 163  
Treating Metals, Method of, 1,497,011. Gustav F. Gerds, Bremen, Germany .... 333

Trolley-Wheel Blank and Method of Making Same, 1,494,411. Wm. S. Bidle, Cleveland, Ohio .... 332  
Trolley Wheels, Method of Making, 1,494,410. Wm. S. Bidle, Cleveland, Ohio .... 332  
Tube and Method of Making Tubes, 1,506,971. Harry W. Bundy, Detroit, Mich. .... 457  
Turbine Blades, Alloy for, 1,481,782. Ito Tyro Iytaka, Sugamoachi, Japan .... 122

**U**

Uniting Copper to Steel, Process of, 1,511,195. John B. Austin, Cleveland, Ohio. .... 500  
Uniting Copper to Steel, Process of, 1,511,197. John B. Austin, Cleveland, Ohio. .... 500  
Uniting Metal, Process of, 1,511,194. John B. Austin, Cleveland, Ohio. .... 500  
Uniting Metals, Process of, 1,511,196. John B. Austin, Cleveland, Ohio. .... 500

**V**

\*Welding Aluminum, 1,489,008. R. D. Mershon, N. Y., and P. A. Ross, Norwalk, Conn. .... 247  
\*Wheel, Buffing, 1,473,765. T. W. Hanrath, Chicago, Ill. .... 30  
\*Workholder for Polishing Machines, 1,487,506. S. Blickman, Far Rockaway, N. Y. .... 206

**Z**

\*Zinc Cylinders for Primary Batteries, Process for the Manufacture of, 1,477,109. S. O. Copper-Coles, Sunbury-on-Thames, England .... 31  
Zinc-Electroplated Articles, 1,497,265. Joseph Haas, Jr., Muncie, Ind. .... 333  
Zinc, Process for Working, 1,492,230. W. M. Towne, Brooklyn, N. Y. .... 289

## EQUIPMENT

**A**

\*Acid Pump, Thompson ..... 459  
\*Air-Tight Blast Gate ..... 335  
Alloy, New Aluminum ..... 165  
Aluminum Alloy, New ..... 163  
Aluminum Ball, Spun ..... 460  
\*Aluminum Melting Furnaces ..... 293  
Angle and Eye Bending Machine, Wallace Improved Combination ..... 373  
\*Annealing Wire and Strip, A New Plant for ..... 78  
Anti-Corrosive Solution ..... 124  
\*Automatic Buffing Machine ..... 417

**B**

\*Baird Six-Spindle Chucking Machine ..... 248  
Ball, Spun Aluminum ..... 460  
\*Barrels, Plating ..... 374  
Bearing Material, Durex ..... 502  
\*Belke Commutating Rheostats ..... 34  
Belke Porcelain Enamelled Racks ..... 34  
\*Bending Machine, Wallace Improved Combination Angle and Eye ..... 373  
\*Blast Equipment, Sand ..... 459  
\*Blast Gate, Air-Tight ..... 335  
\*Box, Worm ..... 373  
\*Brass Tubes, New Lock-Joint ..... 372  
\*Brazing Machine, Electric ..... 249  
British Oxidizing Process, New ..... 125  
British Rust-Proofing, New ..... 121  
\*Buffing Machine, Automatic ..... 417  
Buffing Machine, Tube ..... 35  
\*Buffs, Symmetric ..... 35  
Burns, Butesin Plicate for ..... 208  
Burns, Butesin Plicate for Burns ..... 208

**C**

\*Chucking Machine, Baird Six-Spindle ..... 248  
Cleaner, Metex Metal ..... 32  
\*Cleaner, Window ..... 503  
\*Cleaning Machine, Polishing Wheel ..... 209  
Cleaning Parts for Plating ..... 124  
\*Combination Angle and Eye Bending Machine, Wallace Improved ..... 373  
\*Commutating Rheostats, Belke ..... 34  
\*Comparator, The Double-Wedge ..... 164  
Compound, New Tripoli ..... 35  
\*Continuous Electric Core Ovens ..... 501  
\*Core-Making Machine, The Skeppstedt Multiple ..... 291  
\*Core Ovens, Continuous Electric ..... 501  
Corrosive Solution, Anti ..... 124  
\*Crucible Pouring Device ..... 502  
Crystallizing Lacquer, Hilco ..... 80  
Cutting Torch, New Metal ..... 335

**D**

\*Deposition, Rebuilding by Electro ..... 123  
\*Device, Crucible Pouring ..... 502  
\*Double-Wedge Comparator, The ..... 164  
\*Driven Polishing Lathe, New Motor ..... 334  
\*Driven Swing Frame Grinder, Motor ..... 415  
Ductile Tantalum ..... 78  
Durex Bearing Material ..... 502  
\*Duty Polishing, High Speed Heavy ..... 207

**E**

\*Electric Brazing Machine ..... 249  
\*Electric Core Ovens, Continuous ..... 501  
\*Electric Furnace, New ..... 32  
\*Electric Furnaces, Small ..... 501  
\*Electric Glue Pot ..... 248

\*Electric Solder Pot ..... 80  
Electric Wire, History of Phonocord ..... 416  
\*Electro-Deposition, Rebuilding by ..... 123  
\*Enamel Strainer, Paint and ..... 166  
\*Enamelled Racks, Belke Porcelain ..... 34  
\*Enclosed Self-Ventilating Motors ..... 460  
\*Equipment, Sand Blast ..... 459  
\*Equipment, Tinning ..... 125  
\*Equipment, Welding ..... 80  
\*Eureka Sprayer, New ..... 374  
Everbrite Metal ..... 438  
Exhibit, Link-Belt's ..... 417  
Exhibit, Monarch ..... 417  
Exhibit, National ..... 417  
Exhibit, Pangborn ..... 373  
\*Eye Bending Machines, Wallace Improved Combination Angle and ..... 373

**F**

Finish and Rust Proofing, New ..... 80  
Foundry Riddle, Gyrotary ..... 417  
\*Frame Grinder, Motor Driven Swing ..... 415  
\*Furnace for Refiners, Melting ..... 208  
\*Furnace, Johnson Melting ..... 502  
\*Furnaces, New Electric ..... 32  
\*Furnaces, Aluminum Melting ..... 293  
\*Furnaces, Recuperator ..... 458  
\*Furnaces, Small Electric ..... 501

**G**

\*Gate, Air-Tight Blast ..... 335  
\*Glue Pot, Electric ..... 248  
\*Gooseneck Welding Torch ..... 164  
\*Granulated Nickel Salts, Refined ..... 35  
\*Grinder, Motor Driven Swing Frame ..... 415  
Grinding Lathes, New Polishing or ..... 416  
\*Gun, New Spray ..... 79  
Gyrotary Foundry Riddle ..... 417

**H**

\*Heavy Duty Polishing, High Speed ..... 207  
\*High Speed Heavy Duty Polishing ..... 207  
Hilo Crystallizing Lacquer ..... 80  
History of Phono-Electric Wire ..... 416  
House, New Plating Supply ..... 80

**I**

\*Improved Combination Angle and Eye Bending Machine, Wallace ..... 373  
Installation and Trouble Service ..... 416

**J**

\*Johnson Melting Furnace ..... 502  
\*Joint Brass Tubes, New Lock ..... 372

**L**

Lacquer, Hilo Crystallizing ..... 80  
Lacquer, New ..... 34  
Lathe, New Motor Driven Polishing ..... 334  
Lathes, New Polishing or Grinding ..... 416  
Lining, New Tank ..... 374  
Link-Belt's Exhibit ..... 417  
\*Lock-Joint Brass Tubes, New ..... 372

**M**

\*Machine, Automatic Buffing ..... 417  
\*Machine, Baird Six-Spindle Chucking ..... 248  
\*Machine, Electric Braze ..... 249  
\*Machine, Polishing Wheel Cleaning ..... 209  
\*Machine, Sand ..... 459  
\*Machine, The Skeppstedt Multiple Core-Making ..... 291  
\*Machine, Tube Buffing ..... 35  
\*Machine, Wallace Improved Combination Angle and Eye Bending ..... 373  
\*Magnetic Separator ..... 125  
Material, Durex Bearing ..... 502  
\*Melting Furnace for Refiners ..... 208  
\*Melting Furnace, Johnson ..... 502  
\*Melting Furnaces, Aluminum ..... 293  
\*Melting Metal at 2900° C (5252° F.) ..... 290  
\*Mercury Vapor, Power from ..... 33  
\*Metal at 2900° C (5252° F.), Melting ..... 290  
Metal Cleaner, Metex ..... 32  
Metal Cutting Torch, New ..... 335  
Metal, Everbrite ..... 458  
\*Metal, Modified Monel ..... 165  
Metal Molds, Wash for ..... 416  
Metex Metal Cleaner ..... 32  
\*Modified Monel Metal ..... 165  
Molds, Wash for Metal ..... 416  
Monarch Exhibit ..... 417  
\*Monel Metal, Modified ..... 165  
Mop, New Potash ..... 373  
\*Motor Driven Polishing Lathe, New ..... 334  
\*Motor Driven Swing Frame Grinder ..... 415  
\*Motors, Enclosed Self-Ventilating ..... 400  
\*Multiple Core-Making Machine, The Skeppstedt ..... 291

**N**

National Exhibit ..... 417  
\*Nickel Salts, Refined Granulated ..... 35

**O**

\*Operations Requiring Specialized Treatment, Stamping ..... 415  
\*Ovens, Continuous Electric Core ..... 501  
Oxidizing Process, New British ..... 125

**P**

\*Paint and Enamel Strainer ..... 166  
Pangborn Exhibit ..... 373  
Paper Pulley, New ..... 417  
\*Parts for Plating, Cleaning ..... 124  
Phono-Electric Wire, History of ..... 416

|  |     |
|--|-----|
| Picrate for Burns, Butesia                 | 208 |
| *Plant for Annealing Wire and Strip, A New | 78  |
| *Plating Barrels                           | 374 |
| *Plating, Cleaning Parts for               | 124 |
| Plating, Rectifier for                     | 80  |
| Plating Supply House, New                  | 80  |
| *Polishing, High Speed Heavy Duty          | 207 |
| *Polishing Lathe, New Motor Driven         | 334 |
| Polishing or Grinding Lathes, New          | 416 |
| *Polishing Wheel Cleaning Machine          | 209 |
| *Porcelain Enamelled Racks, Belke          | 34  |
| *Pot, Electric Glue                        | 248 |
| *Pot, Electric Solder                      | 80  |
| Potash Mop, New                            | 373 |
| *Pouring Device, Crucible                  | 302 |
| *Power from Mercury Vapor                  | 33  |
| Process, New British Oxidizing             | 125 |
| Process, New Zincing                       | 334 |
| Proofing, New Finish and Rust              | 80  |
| Pulley, New Paper                          | 417 |
| *Pump, Thompson Acid                       | 459 |

**R**

|   |     |
|---|-----|
| Racks, Belke Porcelain Enamelled                      | 34  |
| Rebuilding by Electro-Deposition                      | 123 |
| Rectifier for Plating                                 | 80  |
| Recuperator Furnaces                                  | 458 |
| Refined Granulated Nickel Salts                       | 35  |
| Refiners, Melting Furnace for                         | 208 |
| Refractories, Super                                   | 502 |
| *Requiring Specialized Treatment, Stamping Operations | 415 |
| *Rheostats, Belke Commutating                         | 34  |
| Riddle, Gyrotary Foundry                              | 417 |
| Rust-Proofing, New British                            | 124 |
| Rust Proofing, New Finish and                         | 80  |

**S**

|   |     |
|---|-----|
| Salts, Refined Granulated Nickel                      | 35  |
| *Sand Blast Equipment                                 | 459 |
| *Sand Machine   | 459 |
| *Schoop Process Developments                          | 336 |
| *Self-Ventilating Motors, Enclosed                    | 460 |
| *Separator, Magnetic                                  | 125 |
| Service, Installation and Trouble                     | 416 |
| *Six-Spindle Chucking Machine, Baird                  | 248 |
| *Skeppstedt Multiple Core-Making Machine, The         | 201 |
| *Small Electric Furnaces                              | 501 |
| *Solder Pot, Electric                                 | 80  |
| Solution, Anti-Corrosive                              | 124 |
| *Specialized Treatment, Stamping Operations Requiring | 415 |
| *Speed Heavy Duty Polishing, High                     | 207 |
| *Spindle Chucking Machine, Baird Six                  | 248 |
| *Spray Gun, New                                       | 79  |
| *Spray Tank   | 79  |
| *Sprayer, New Eureka                                  | 374 |
| Spun Aluminum Ball                                    | 400 |
| *Stamping Operations Requiring Specialized Treatment  | 415 |
| *Strainer, Paint and Enamel                           | 106 |
| *Strip, A New Plant for Annealing Wire and            | 78  |
| Super Refractories                                    | 502 |
| Supply House, New Plating                             | 80  |
| *Swing Frame Grinder, Motor Driven                    | 415 |
| *Symmetric Buffs                                      | 35  |

**T**

|   |     |
|---|-----|
| Tank Lining, New                                      | 374 |
| *Tank, Spray  | 79  |
| Tantalum, Ductile                                     | 78  |
| *Thompson Acid Pump                                   | 459 |
| *Tight Blast Gate, Air                                | 335 |
| *Tinning Equipment                                    | 125 |
| *Torch, Gooseneck Welding                             | 104 |
| Torch, New Metal Cutting                              | 335 |
| *Treatment, Stamping Operations Requiring Specialized | 415 |
| Tripoli Compound, New                                 | 35  |
| Trouble Service, Installation and                     | 416 |
| *Tube Buffing Machine                                 | 35  |
| *Tubes, New Lock-Joint Brass                          | 372 |

**V**

|  |     |
|--|-----|
| *Vapor, Power from Mercury                                 | 33  |
| <b>W</b>   |     |
| Wallace Improved Combination Angle and Eye Bending Machine | 373 |
| Wash for Metal Molds                                       | 416 |
| *Wedge Comparator, The Double                              | 164 |
| Welding Equipment  | 80  |
| *Welding Torch, Gooseneck                                  | 164 |
| *Wheel Cleaning Machine, Polishing                         | 209 |
| *Window Cleaner  | 503 |
| *Wire and Strip, A New Plant for Annealing                 | 78  |
| Wire, History of Phone-Electric                            | 416 |
| *Worm Box  | 373 |

**Z**

|                      |     |
|----------------------|-----|
| Zincing Process, New | 384 |
|----------------------|-----|

**EQUIPMENT—FIRMS****A**

|   |     |
|---|-----|
| Abbott Laboratories, The, Chicago, Ill.   |     |
| Butesia Picrate for Burns   | 208 |
| Acme Manufacturing Company, 1045 Howard street, Detroit, Mich. *Automatic Buffing Machine | 417 |
| Acme Manufacturing Company, 355 Howard street, Detroit, Mich. *Tube Buffing Machine       | 35  |

|  |     |
|--|-----|
| Ajax Electrothermic Corporation, Trenton, N. J. *Melting Metal at 2900° (5232° F.)                         | 290 |
| American Electric Motors, Inc., Milwaukee, Wis. *Enclosed Self-Ventilating Motors                          | 400 |
| American Machine & Manufacturing Company, 441 Folsom street, San Francisco, Calif. Rectifier for Plating   | 80  |
| Ashcroft Manufacturing Company, Sales Department, 100 W. 42nd street, New York City. *Modified Monel Metal | 165 |

**B**

|  |     |
|--|-----|
| Baird Machine Company, Bridgeport, Conn. *Baird Six-Spindle Chucking Machine                             | 248 |
| Bastian Blessing Company, 216 E. Ontario street, Chicago, Ill. *Gooseneck Welding Torch                  | 164 |
| Belko Manufacturing Company, 2902 W. Van Buren street, Chicago, Ill. *Belko Commutating Rheostats        | 34  |
| Belko Manufacturing Company, 2952 W. Van Buren street, Chicago, Ill. *Belko Porcelain Enamelled Racks    | 34  |
| Best Pulley Manufacturing Company, 400 Talcott avenue, St. Louis, Mo. New Pulley                         | 417 |
| Booth Electric Furnace Company, Chicago, Ill. *Small Electric Furnaces                                   | 501 |
| Bridgeport Brass Company, Bridgeport, Conn. History of Phone-Electric Wire                               | 416 |
| Buffalo Forge Company, 400 Broadway, Buffalo, N. Y. *Stamping Operations Requiring Specialized Treatment | 415 |
| Byrd, R. E., Erie, Pa. Wash for Metal Molds  | 416 |

**C**

|  |     |
|--|-----|
| Callender Soldering Process Company, 12 S. Jefferson street, Chicago, Ill. New Tank Lining         | 374 |
| Calender Soldering Process Company, 12 South Jefferson street, Chicago, Ill. *Tinning Equipment    | 125 |
| Classen, Alexander, Aachen, Germany. New Zinc Process  | 334 |
| Cleveland Armature Works, 4732 St. Clair avenue, Cleveland, Ohio. *High Speed Heavy Duty Polishing | 207 |
| Coleman Company, F. A., Cleveland, Ohio. *Continuous Electric Core Ovens                           | 501 |
| Coleman Company, F. A., 6539 Metta Avenue, Cleveland, Ohio. *Aluminum Melting Furnaces             | 293 |
| Combustion Engineering Corporation, New York. *Recuperator Furnaces                                | 458 |
| Crown Rheostat & Supply Company, 1910 W. Park avenue, Chicago, Ill. *Thompson Acid Pump            | 459 |
| Crompton & Company, W. D., 8-10 Bridge street, New York City. *Electric Brazing Machine            | 249 |
| Curtiss Bay Copper & Iron Works, Baltimore, Md. Everbrite Metal                                    | 458 |

**D**

|   |     |
|---|-----|
| Daniels & Orben Company, 81 Walker street, New York City. *Plating Barrels        | 374 |
| Day Manufacturing Company, S. A., Buffalo, N. Y. Anti-Corrosive Solution          | 124 |
| De Vilbiss Manufacturing Company, 266 Phillips ave., Toledo, Ohio. *New Spray Gun | 79  |
| Diamond Machine Company, Providence, R. I. *Motor Driven Swing Frame Grinder      | 415 |

**E**

|   |     |
|---|-----|
| Eureka Pneumatic Spray Company, Inc., 87-28 130th street, Richmond Hill, L. I. *New Eureka Sprayer                      | 374 |
| Fansteel Products Company, North Chicago, Ill. Ductile Tantalum   | 78  |
| Fescal, Ltd., Penarth St., Canterbury Road, Old Kent Road, London, S. E. 15, England. *Rebuilding by Electro-Deposition | 123 |

**G**

|  |    |
|--|----|
| General Electric Company, Schenectady, N. Y. *Power from Mercury Vapor | 33 |
| General Electric Company, Schenectady, N. Y. Welding Equipment         | 80 |
| Greater Service Company, 331 Broad street, Newark, N. J. New Lacquer   | 31 |

**H**

|  |     |
|--|-----|
| Hanson & Van Winkle Company, New York. New Potash Mop                | 373 |
| Hilo Varnish Corporation, Brooklyn, N. Y. Hilo Crystallizing Lacquer | 80  |

**J**

|   |     |
|---|-----|
| Jaquetry, William, 17 Edgewood avenue, Waterbury, Conn. *New Lock-Joint Brass Tubes | 872 |
| Johnson Gas Appliance Company, Cedar Rapids, Iowa. *Johnson Melting Furnace         | 502 |
| Jones Foundry and Machine Company, W. A., Chicago, Ill. *Worm Box                   | 373 |

**K**

|  |     |
|--|-----|
| Kopf, M. G., 612 Schwind Building, Dayton, Ohio. *Polishing Wheel Cleaning Machine | 200 |
| Kyle & Company, George W., Grand & Thompson Sts., N. Y. City. *Symmetric Buffs     | 35  |

|  |     |
|--|-----|
| Lava Crucible Company, Pittsburgh, Pa. Super Refractories  | 502 |
| Leeds Electrical Construction Company, Ltd., Charnouth street, Leeds, England. *New Plant for Annealing Wire and Strip | 78  |
| Link-Belt Company, Chicago, Ill. Link-Belt's Exhibit   | 417 |

**M**

|  |     |
|--|-----|
| MacDermid, Inc., Waterbury, Conn. Metal Cleaner  | 32  |
| Magnetic Manufacturing Company, Milwaukee, Wis. *Magnetic Separator                                | 125 |
| Metal Penetrating Color Corporation, 90 West Broadway, New York City. New Finish and Rust Proofing | 30  |
| Metals Coating Company of America, 405 No. 3rd St., Philadelphia, Pa. *Schoop Process Developments | 336 |
| Middlesex Aniline Company, Lincoln, N. J. *Refined Granulated Nickel Salts                         | 35  |
| Milburn Company, Alexander, Baltimore, Md. New Medal Cutting Torch                                 | 335 |
| Miller Company, J. C., 250-252 Pearl street, Grand Rapids, Mich. New Plating Supply House          | 80  |
| Miller Industries Company, H. H., Canton, Ohio. *New Electric Furnace                              | 32  |
| Mitchell Engineering Company, Springfield, Ohio. *New Motor Driven Polishing Lathe                 | 334 |
| Modern Engineering Company, 318 Broadway, New York City. Installation and Trouble Service          | 416 |
| Modern Pouring Device Company, First Washington, Wis. *Crucible Pouring Device                     | 302 |
| Monarch Engineering and Manufacturing Company, Baltimore, Md. Monarch Exhibit                      | 417 |
| Morraine Products Company, Dayton, Ohio. Durex Bearing Material                                    | 502 |

**N**

|   |     |
|---|-----|
| National Engineering Company, 549 W. Washington Blvd., Chicago, Ill. National Exhibit | 417 |
| National Engineering Company, Chicago, Ill. *Sand Machine                             | 459 |
| Newman Manufacturing Company, Cincinnati, Ohio. Gyrotary Foundry Riddle               | 417 |
| Newman Manufacturing Company, Cincinnati, Ohio. New Polishing or Grinding Lathes      | 416 |
| Nulite Polish Company, 248-250 Plymouth street, Brooklyn, N. Y. New Tripoli Compound  | 35  |

**P**

|   |     |
|---|-----|
| Pangborn Corporation, Hagerstown, Md. Pangborn Exhibit                  | 373 |
| Purity Stamping Company, Battle Creek, Mich. *Paint and Enamel Strainer | 166 |

**R**

|  |     |
|--|-----|
| Rockwell Company, W. S., 50 Church street, New York. *Air-Tight Blast Gate                         | 335 |
| Rowe Chemical Company, 18 Newbury Road, Hale End, London, E. 4, England. New British Rust-Proofing | 124 |
| Ruemelin Manufacturing Company, Minneapolis, Minn. *Sand Blast Equipment                           | 459 |

**S**

|   |     |
|---|-----|
| Skeppstedt Erickson Company, Moline, Ill. *Skeppstedt Multiple Core-Making Machine, The       | 291 |
| Skybride Company, Cleveland, Ohio. *Window Cleaner  | 501 |
| Stephenson, E. M., 64 Evergreen avenue, Hartford, Conn. *Spray Tank                           | 79  |
| Stirton & Wallin Company, 124 Prospect street, New Haven, Conn. *The Double-Wedge Comparator  | 164 |
| Stoltzka, Frank Joseph, Box 64A, East Market street, Ext., Akron, Ohio. Spun Aluminum Ball    | 400 |
| Surface Combustion Company, 366 Gerard avenue, Bronx, N. Y. City. *Cleaning Parts for Plating | 124 |

**T**

|   |     |
|---|-----|
| Timeus Otto, Inglewood, Calif. New Aluminum Alloy                     | 165 |
| Tucker, Alexander, Birmingham, England. New British Oxidizing Process | 125 |

**U**

|  |     |
|--|-----|
| U. S. Gas Furnace Company, 46 Clifford street, Providence, R. I. *Melting Furnace for Refiners | 205 |
|--|-----|

**V**

|   |     |
|---|-----|
| Van Dorn Electric Tool Company, Cleveland, Ohio. *Electric Glue Pot | 248 |
|---|-----|

**W**

|   |     |
|---|-----|
| Wallace & Company, J. D., 1401-17 W Jackson Blvd., Chicago, Ill. *Electric Solder Pot   | 50  |
| Wallace Supplies Manufacturing Company, 1312 Diversify Parkway, Chicago, Ill. *Wallace Improved Combination Angle and Eye Bending Machine | 373 |

502  
78  
417  
32  
125  
50  
136  
35  
123  
86  
32  
134  
16  
92  
17  
59  
17  
10  
33  
73  
96  
33  
24  
39  
11  
0  
9  
4  
0  
5  
8  
0  
9  
0  
4  
5  
8  
0  
2